

# SEARCH REQUEST FORM

Access DB# 99611

Scientific and Technical Information Center

Requester's Full Name: STEVAN A. DESAI Examiner #: 68483 Date: 7-24-03  
 Art Unit: 1773 Phone Number 308-428-7 Serial Number: 09/901802  
 Mail Box and Bldg/Room Location: 11B02 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

\*\*\*\*\*  
 Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc, if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: \_\_\_\_\_

Inventors (please provide full names): MEI-LING WU

JAMES KIELY

Earliest Priority Filing Date: \_\_\_\_\_

\*For Sequence Searches Only\* Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

PLEASE SEARCH IN NON-PATENT LITERATURE ONLY

FOR AUTOMIS:

KAZUHIKO ENDO  
 TORU TATSUMI  
 NISHIZAWA YASUHIRO  
 MORITA TAKESHI

TRY EACH NAME PAIR AS 1<sup>st</sup> + LAST  
 LAST + 1<sup>st</sup>

AND FOR SUBJECT MATTER

CARBON ADJ FILM

CONTAINING BOTH FLUORINE AND NITROGEN

SOMETIMES REFERED TO AS FLUORINE DOPED  
 or  
 NITROGEN DOPED

SOME SHORTHAND TOO:

C:F or C:F,N or C:H,F,N  
 2 C:F " 2 " " 2 "  
 2 C:F " 2 " " 2 "

## STAFF USE ONLY

Searcher: <u>ELJ</u>	Type of Search	Vendors and cost where applicable
Searcher Phone #: _____	NA Sequence (#) _____	STN <u>\$416.67</u>
Searcher Location: _____	AA Sequence (#) _____	Dialog _____
Date Searcher Picked Up: _____	Structure (#) _____	Questel/Orbit _____
Date Completed: <u>7-25-03</u>	Bibliographic <input checked="" type="checkbox"/>	Dr.Link _____
Searcher Prep & Review Time: <u>5</u>	Litigation _____	Lexis/Nexis _____
Clerical Prep Time: _____	Fulltext _____	Sequence Systems _____
Online Time: <u>80</u>	Patent Family _____	WWW/Internet _____
	Other _____	Other (specify) _____

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FILE 'HCAPLUS' ENTERED AT 16:45:04 ON 25 JUL 2003

L1	3515	SEA KAZUHIKO E?/AU OR ENDO K?/AU
L2	✓ 1323	SEA TORU T?/AU OR TATSUMI T?/AU
L3	✓ 1117	SEA NISHIZAWA Y?/AU OR YASUHIRO N?/AU
L4	✓ 3284	SEA MORITA T?/AU OR TAKESHI M?/AU
L5	0	SEA L1 AND L2 AND L3 AND L4
L6	27	SEA L1 AND L2
L7	0	SEA L1 AND L3
L8	2	SEA L1 AND L4
L9	0	SEA L2 AND L3
L10	✓ 14	SEA L3 AND L4
L11	117105	SEA WU ?/AU OR LING WU ?/AU OR MEI LING WU ?/AU OR MEI ?/AU OR LING ?/AU OR MEI LING ?/AU OR LING WU ?/AU
L12	605	SEA KIELY ?/AU
L13	3	SEA L11 AND L12
L14	✓ 337747	SEA RECORD?
L15	✓ 138622	SEA LUBRIC?
L16	0	SEA L13 AND (L14 OR L15)
L17	0	SEA L6 AND L10
L18	8	SEA (L6 OR L8 OR L10) AND (L14 OR L15)
L19	✓ 324	SEA (L1 OR L2 OR L3 OR L4) AND L14
L20	→ ✓ 86	SEA (L1 OR L2 OR L3 OR L4) AND L15
L21	26	SEA L19 AND L20
L22	345	SEA KAZUHIKO E/AU OR ENDO K/AU
L23	150	SEA TORU T/AU OR TATSUMI T/AU
L24	86	SEA NISHIZAWA Y/AU OR YASUHIRO N/AU
L25	209	SEA MORITA T/AU OR TAKESHI M/AU
L26	5	SEA L22 AND L23
L27	0	SEA L22 AND L24
L28	0	SEA L22 AND L25
L29	0	SEA L23 AND L24
L30	0	SEA L23 AND L25
L31	0	SEA L24 AND L25
L32	16	SEA (L22 OR L23 OR L24 OR L25) AND L14
L33	4	SEA (L22 OR L23 OR L24 OR L25) AND L15
L34	121	SEA KAZUHIKO ENDO/AU OR ENDO KAZUHIKO/AU
L35	198	SEA TORU TATSUMI/AU OR TATSUMI TORU/AU
L36	24	SEA NISHIZAWA YASUHIRO/AU OR YASUHIRO NISHIZAWA/AU
L37	268	SEA MORITA TAKESHI/AU OR TAKESHI MORITA/AU
L38	22	SEA L34 AND L35
L39	0	SEA L34 AND L36
L40	0	SEA L34 AND L37

and FLUORINE  
and NITROGEN  
NON-PAT  
1985-on

L41 0 SEA L35 AND L36  
L42 0 SEA L35 AND L37  
L43 14 SEA L36 AND L37  
L44 0 SEA L38 AND L43  
L45 8 SEA (L38 OR L43) AND (L14 OR L15)  
L46 21 SEA (L34 OR L35 OR L36 OR L37) AND L14  
L47 33 SEA (L34 OR L35 OR L36 OR L37) AND L15  
L48 8 SEA L46 AND L47  
L49 21 SEA L18 OR L26 OR L33 OR L45 OR L48  
L50 16 SEA L32 NOT L49  
L51 18 SEA L21 NOT (L49 OR L50)  
L52 9 SEA L46 NOT (L49 OR L50 OR L51)  
L53 6 SEA L12 AND L14  
L54 2 SEA L12 AND L15  
L55 1 SEA L53 AND L54  
L56 5 SEA L53 NOT L55  
L57 4448 SEA WU M?/AU  
L58 68 SEA L57 AND L14  
L59 51 SEA L57 AND L15  
L60 0 SEA L58 AND L59  
L61 0 SEA L58 AND (FLUORINE# OR F)  
L62 7 SEA L58 AND (NITROGEN# OR N)

FILE 'REGISTRY' ENTERED AT 17:41:57 ON 25 JUL 2003

E FLUORINE/CN  
L63 1 SEA FLUORINE/CN  
E NITROGEN/CN  
L64 1 SEA NITROGEN/CN  
E CARBON/CN  
L65 1 SEA CARBON/CN

FILE 'LCA' ENTERED AT 17:42:32 ON 25 JUL 2003

L66 7647 SEA (FILM? OR THINFILM? OR LAYER? OR OVERLAY? OR  
OVERLAID? OR LAMIN? OR LAMEL? OR SHEET? OR LEAF? OR  
FOIL? OR COAT? OR TOPCOAT? OR OVERCOAT? OR VENEER? OR  
SHEATH? OR COVER? OR ENVELOP? OR ENCAS? OR ENWRAP? OR  
OVERSPREAD?)/BI,AB  
L67 7219 SEA FILM? OR THINFILM? OR LAYER? OR OVERLAY? OR OVERLAID?  
OR LAMIN? OR LAMEL? OR SHEET? OR COAT? OR TOPCOAT? OR  
UNDERCOAT? OR OVERCOAT? OR VENEER? OR SHEATH? OR COVER?  
OR ENVELOP? OR ENCAS? OR ENWRAP? OR OVERSPREAD?

FILE 'HCA' ENTERED AT 17:48:25 ON 25 JUL 2003

L68 85203 SEA (L65 OR CARBON# OR CARBONACEOUS? OR CARBONIFEROUS?  
OR C OR DLC OR D(W)L(W)C OR DIAMONDLIK? OR DIAMOND?(A)LIK  
E?)(2A)L67  
L69 38082 SEA L63  
L70 237987 SEA L64  
L71 3799 SEA (L63 OR FLUORINE# OR F OR F2)(2A)(DOPE# OR DOPING#  
OR DOPANT? OR INTERCALAT? OR ADMIX? OR IMMIX? OR COMMIX?  
OR INTERMIX? OR INTERSPERS? OR IMPREGNAT?)  
L72 18547 SEA (L64 OR NITROGEN# OR N OR N2)(2A)(DOPE# OR DOPING#

OR DOPANT? OR INTERCALAT? OR ADMIX? OR IMMIX? OR COMMIX?  
OR INTERMIX? OR INTERSPERS? OR IMPREGNAT?)

L73 371 SEA A(W)C(W)F  
L74 1449 SEA A(W)C(W)N  
L75 158 SEA L68 AND L69 AND L70  
L76 496677 SEA DOPE# OR DOPING# OR DOPANT? OR INTERCALAT? OR ADMIX?  
OR IMMIX? OR COMMIX? OR INTERMIX? OR INTERSPERS? OR  
IMPREGNAT?

L77 42 SEA L75 AND L76  
L78 89 SEA L68 AND L73  
L79 127 SEA L68 AND L74  
L80 0 SEA L78 AND L79  
L81 7 SEA L78 AND L70  
L82 0 SEA L79 AND L69  
L83 13 SEA L68 AND (L71 OR L73) AND (L72 OR L74)  
L84 254999 SEA L65  
L85 41 SEA L77 AND L84  
L86 41 SEA L85 AND L69 AND L70 AND L76  
✓ L87 19 SEA L81 OR L83  
✓ L88 31 SEA (L77 OR L85) NOT L87  
L89 2777 SEA (FLUORINAT? OR PERFLUORINAT?) (2A)L67  
L90 4758 SEA (NITROGENAT? OR NITRIDED OR NITRIDING# OR NITRIDAT?) (2A)L67

L91 25 SEA L68 AND (L71 OR L73 OR L89) AND (L72 OR L74 OR L90)  
L92 4 SEA L91 NOT (L87 OR L88)

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L87 ANSWER 1 OF 19 HCA COPYRIGHT 2003 ACS on STN

138:64697 Effects of plasma treatment on the properties of  
Cu/Ta/fluorinated amorphous carbon (a-C:

F)/Si multilayer structure. Yang, Sung-Hoon; Kim, Heondo;  
Park, Jong-Wan (Division of Materials Science and Engineering,  
Hanyang University, Seongdong-gu, Seoul, 133-791, S. Korea).  
Journal of Vacuum Science & Technology, A: Vacuum, Surfaces, and  
Films, 20(5), 1769-1773 (English) 2002. CODEN: JVTAD6. ISSN:  
0734-2101. Publisher: American Institute of Physics.

AB The effects of nitrogen plasma treatment on the properties of a  
Cu/Ta/a-C:F structure were  
investigated. Interface reactions between Ta and a-  
C:F were also examd. A strong interaction between  
Ta and a-C:F at the interface and

defluorination of **a-C:F film** occurred during Ta sputter deposition. Ta fluoride was obsd. at the interface between Ta and **a-C:F**, which led to adhesion and reliability problems. In order to suppress the reaction at the interface, nitrogen plasma was applied to the as-deposited **a-C:F film**. The fluorine concn. of the film surface decreases with plasma treatment. As the plasma treatment power increases, the adhesion between Ta and **a-C:F film** improved. From this study, it was found that nitrogen plasma treatment of **a-C:F films** is a very effective method for suppression of defluorination of **a-C:F film** and the interface reaction between Ta and **a-C:F film**.

- IT 7727-37-9, Nitrogen, processes  
     (plasma; effects of plasma treatment on properties of  
     Cu/Ta/fluorinated amorphous carbon (**a-C:F**)/Si multilayer structure)
- RN 7727-37-9 HCA
- CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

- CC 76-14 (Electric Phenomena)  
     Section cross-reference(s): 66
- IT Dehalogenation  
     (defluorination; effects of plasma treatment on properties of  
     Cu/Ta/fluorinated amorphous carbon (**a-C:F**)/Si multilayer structure)
- IT Adhesion, physical  
     Dielectric constant  
     Interconnections, electric  
     Interfacial reaction  
     Plasma  
     Refractive index  
     Sheet resistance  
     Sputtering  
         (effects of plasma treatment on properties of Cu/Ta/fluorinated  
         amorphous carbon (**a-C:F**)/Si multilayer structure)
- IT 7440-21-3, Silicon, processes  
     (effects of plasma treatment on properties of Cu/Ta/fluorinated  
     amorphous carbon (**a-C:F**)/Si multilayer structure)
- IT 7782-41-4, Fluorine, processes  
     (effects of plasma treatment on properties of Cu/Ta/fluorinated  
     amorphous carbon (**a-C:F**)/Si multilayer structure)
- IT 39455-60-2, Tantalum fluoride  
     (effects of plasma treatment on properties of Cu/Ta/fluorinated

- amorphous carbon (a-C:F)/Si multilayer structure)
- IT 7440-25-7, Tantalum, processes 7440-44-0, Carbon, processes  
7440-50-8, Copper, processes  
(interconnects; effects of plasma treatment on properties of Cu/Ta/fluorinated amorphous carbon (a-C:F)/Si multilayer structure)
- IT 7727-37-9, Nitrogen, processes  
(plasma; effects of plasma treatment on properties of Cu/Ta/fluorinated amorphous carbon (a-C:F)/Si multilayer structure)
- L87 ANSWER 2 OF 19 HCA COPYRIGHT 2003 ACS on STN
- 137:360912 Improvements of characteristics of fluorinated dielectric films integrated as interlayer dielectrics. Shieh, Jia-Min; Tsai, Kou-Chiang; Suen, Shich-Chang; Dai, Bau-Tong (National Nano Device Laboratories, Hsinchu, 30050, Taiwan). Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures, 20(4), 1388-1393 (English) 2002. CODEN: JVTBD9. ISSN: 0734-211X. Publisher: American Institute of Physics.
- AB Fluorinated amorphous C films (a-C:F) with post nitrogen plasma treatments demonstrate the characteristics of interlayer dielects., including high resistance to pyrolysis, Cu diffusion, and penetration of corrosive species into intermetals. N plasma nitridation was performed to passivate a-C:F films against Cu diffusion, and to prevent the F contents from penetrating into Cu intermetals. These improvements to a-C:F films are potentially applicable to fluorinated dielects., such as SiOF.
- IT 7727-37-9, Nitrogen, processes  
(plasma nitriding amorphous carbon fluoride dielec. film for semiconductor devices to prevent copper diffusion)
- RN 7727-37-9 HCA
- CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

- CC 76-3 (Electric Phenomena)
- ST amorphous carbon fluoride dielec film plasma  
nitriding copper barrier
- IT Capacitors  
(MIS; plasma nitriding amorphous carbon fluoride dielec. film for semiconductor devices to prevent copper diffusion)
- IT Annealing  
Dielectric constant  
Dielectric films  
Diffusion barrier  
Leakage current

## Passivation

(plasma nitriding amorphous **carbon** fluoride dielec. **film** for semiconductor devices to prevent copper diffusion)

## IT Nitriding

(plasma; plasma nitriding amorphous **carbon** fluoride dielec. **film** for semiconductor devices to prevent copper diffusion)

## IT Desorption

(thermal, water; plasma nitriding amorphous **carbon** fluoride dielec. **film** for semiconductor devices to prevent copper diffusion)

## IT 7732-18-5, Water, processes

(desorption; plasma nitriding amorphous **carbon** fluoride dielec. **film** for semiconductor devices to prevent copper diffusion)

## IT 51311-17-2, Carbon fluoride

(plasma nitriding amorphous **carbon** fluoride dielec. **film** for semiconductor devices to prevent copper diffusion)

## IT 7727-37-9, Nitrogen, processes

(plasma nitriding amorphous **carbon** fluoride dielec. **film** for semiconductor devices to prevent copper diffusion)

## IT 7440-50-8, Copper, processes

(plasma nitriding amorphous **carbon** fluoride dielec. **film** for semiconductor devices to prevent copper diffusion)

L87 ANSWER 3 OF 19 HCA COPYRIGHT 2003 ACS on STN

137:344640 Reduction of etching plasma damage on low dielectric constant fluorinated amorphous **carbon films** by multiple H<sub>2</sub> plasma treatment. Shieh, Jia-Min; Tsai, Kou-Chiang; Dai, Bau-Tong; Wu, Yew-Chung; Wu, Yu-Hen (National Nano Device Laboratories, Hsinchu, 30050, Taiwan). Journal of Vacuum Science & Technology, B: Microelectronics and Nanometer Structures, 20(4), 1476-1481 (English) 2002. CODEN: JVTBD9. ISSN: 0734-211X. Publisher: American Institute of Physics.

AB Two-step H plasma treatment on low dielec. const. (low-k) fluorinated amorphous **C films** (**a-C:F**) was conducted to improve their thermal stability and reduce the damage caused by the patterning processes. First, H plasma treatment repairs imperfect bonds of as-deposited **a-C:F films**, stabilizing their chem. structures and increasing their resistance against elevated thermal stresses. After this passivation process, an addnl. H plasma treatment was applied to **a-C:F films** that had been etched using a mixt. of N<sub>2</sub> + O<sub>2</sub> + CHF<sub>3</sub>, enabling sub-130 nm damascene trenches to be patterned and repairing the chem. structures destroyed by the etching plasma.

## IT 7727-37-9, Nitrogen, processes

(lowering of etching plasma damage on low dielec. const.

fluorinated amorphous **carbon films** by  
multiple hydrogen plasma treatment)

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

CC 76-10 (Electric Phenomena)  
ST hydrogen plasma treatment amorphous **carbon** fluoride dielec  
film  
IT Bond  
(carbon-fluorine; lowering of etching plasma damage on low  
dielec. const. fluorinated amorphous **carbon**  
**films** by multiple hydrogen plasma treatment)  
IT Dielectric constant  
Dielectric films  
Leakage current  
Passivation  
Plasma  
Thermal stability  
(lowering of etching plasma damage on low dielec. const.  
fluorinated amorphous **carbon films** by  
multiple hydrogen plasma treatment)  
IT Etching  
(plasma; lowering of etching plasma damage on low dielec. const.  
fluorinated amorphous **carbon films** by  
multiple hydrogen plasma treatment)  
IT 51311-17-2, Carbon fluoride  
(lowering of etching plasma damage on low dielec. const.  
fluorinated amorphous **carbon films** by  
multiple hydrogen plasma treatment)  
IT 1333-74-0, Hydrogen, processes  
(lowering of etching plasma damage on low dielec. const.  
fluorinated amorphous **carbon films** by  
multiple hydrogen plasma treatment)  
IT 75-46-7, Fluoroform 7664-41-7, Ammonia, processes  
7727-37-9, Nitrogen, processes 7782-44-7, Oxygen,  
processes  
(lowering of etching plasma damage on low dielec. const.  
fluorinated amorphous **carbon films** by  
multiple hydrogen plasma treatment)

L87 ANSWER 4 OF 19 HCA COPYRIGHT 2003 ACS on STN

137:314688 **Fluorine-doped diamondlike**  
**carbon coatings** for precision-edged instruments,  
flexible polymeric films and electrosurgical instruments. Bray,  
Donald J.; Venkatraman, Chandra; Outten, Craig A.; Halter,  
Christopher; Goel, Arvind (N.V. Bekaert S.A., Belg.). U.S. US  
6468642 B1 20021022, 26 pp., Cont.-in-part of U.S. Ser. No. 133,951.  
(English). CODEN: USXXAM. APPLICATION: US 1998-204441 19981202.  
PRIORITY: US 1995-538731 19951003; US 1997-PV67567 19971205; US



1997-PV67750 19971205; US 1998-133951 19980814.

AB The invention relates to **fluorine-doped** coatings which include a diamond-like compn. contg. carbon, silicon, oxygen, hydrogen, and fluorine on various substrates. Preferred substrates include flexible substrates, precision-edged substrates, and electrosurgical instruments. The **fluorine-doped diamondlike coating** is deposited on the substrate in a vacuum coating chamber using co-deposition of clusterless particle beams comprised of ions, atoms, or radicals of the carbon, silicon, oxygen, hydrogen, and fluorine. The mean free path of each particle species is in excess of the distance between its source and the growing particle coating surface of the substrate. The coatings without an addnl. dopant have dielec. strength exceeding 1 MV/cm and can be as high as 4 MV/cm. The coatings have a very low dielec. const., as low as 2.5, very low surface energy, as low as 19.6 dyne/cm, and a high water contact angle, as high as 101 .degree. (renders the surface of flexible substrates hydrophobic). The high water angle of the coating renders the surface of the flexible substrate hydrophobic.

IT 7782-41-4, **Fluorine**, uses  
(dopant; **fluorine-doped diamondlike carbon coatings** with high dielec. strength, adhesion and hydrophobicity)

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM B32B009-00

NCL 428216000

CC 57-8 (Ceramics)

Section cross-reference(s): 38, 63, 76

ST **fluorine doped diamondlike carbon coating** dielec strength adhesion hydrophobicity; electrosurgical instrument **fluorine doped diamondlike carbon coating**; razor blade **fluorine doped diamondlike carbon coating**; elec resistivity **fluorine doped diamondlike carbon coating**; dielec film **fluorine doped diamondlike carbon coating**; flexible polymeric film **fluorine doped diamondlike carbon coating** hydrophobicity

IT Multilayers  
(MIMs; **fluorine-doped diamondlike carbon coatings** with high dielec. strength, adhesion and hydrophobicity)

IT Ice  
(anti-icing; properties of **fluorine-doped diamondlike carbon coatings** for

- precision-edged instruments, flexible polymeric films and  
electrosurgical instruments)
- IT Coating materials  
Films  
(diamondlike carbon; fluorine-  
doped diamondlike carbon  
coatings with high dielec. strength, adhesion and  
hydrophobicity)
- IT Polyesters, processes  
Polyimides, processes  
(flexible films; fluorine-doped  
diamondlike carbon coatings with high  
dielec. strength, adhesion and hydrophobicity)
- IT Coating materials  
(flexible, substrate; fluorine-doped  
diamondlike carbon coatings with high  
dielec. strength, adhesion and hydrophobicity)
- IT Dielectric films  
Doping  
Knives  
(fluorine-doped diamondlike  
carbon coatings with high dielec. strength,  
adhesion and hydrophobicity)
- IT Tools  
(industrial; fluorine-doped  
diamondlike carbon coatings with high  
dielec. strength, adhesion and hydrophobicity)
- IT Medical equipment  
(instruments, electrosurgical blades; fluorine-  
doped diamondlike carbon  
coatings with high dielec. strength, adhesion and  
hydrophobicity)
- IT Adhesion, physical  
(interfacial; properties of fluorine-doped  
diamondlike carbon coatings for  
precision-edged instruments, flexible polymeric films and  
electrosurgical instruments)
- IT Etching  
(patterning; patterning of fluorine-doped  
diamondlike carbon coatings)
- IT Cutting  
(performance; properties of fluorine-doped  
diamondlike carbon coatings for  
precision-edged instruments, flexible polymeric films and  
electrosurgical instruments)
- IT Ion beams  
Molecular beams  
Particle beams  
(plasma deposition of fluorine-doped  
diamondlike carbon coatings with high  
dielec. strength, adhesion and hydrophobicity)
- IT Vapor deposition process

- (plasma; **fluorine-doped diamondlike carbon coatings** with high dielec. strength, adhesion and hydrophobicity)
- IT Polyimides, processes  
(polyamide-, flexible films; **fluorine-doped diamondlike carbon coatings** with high dielec. strength, adhesion and hydrophobicity)
- IT Polyamides, processes  
(polyimide-, flexible films; **fluorine-doped diamondlike carbon coatings** with high dielec. strength, adhesion and hydrophobicity)
- IT Polysiloxanes, processes  
(precursors; **fluorine-doped diamondlike carbon coatings** with high dielec. strength, adhesion and hydrophobicity)
- IT Dielectric constant  
Dielectric strength  
Electric resistance  
Friction  
Hardness (mechanical)  
Hydrophobicity  
Microhardness  
Surface energy  
Thermal stability  
Young's modulus  
(properties of **fluorine-doped diamondlike carbon coatings** for precision-edged instruments, flexible polymeric films and electrosurgical instruments)
- IT Wear  
(rate; properties of **fluorine-doped diamondlike carbon coatings** for precision-edged instruments, flexible polymeric films and electrosurgical instruments)
- IT Tools  
(razor blades; **fluorine-doped diamondlike carbon coatings** with high dielec. strength, adhesion and hydrophobicity)
- IT Coating materials  
(scratch-resistant; **fluorine-doped diamondlike carbon coatings** with high dielec. strength, adhesion and hydrophobicity)
- IT Fluoropolymers, processes  
(substrates; **fluorine-doped diamondlike carbon coatings** with high dielec. strength, adhesion and hydrophobicity)
- IT Contact angle  
(water; properties of **fluorine-doped diamondlike carbon coatings** for precision-edged instruments, flexible polymeric films and

- electrosurgical instruments)
- IT 75-73-0, Carbon tetrafluoride  
(CF<sub>4</sub>-oxygen film patterning etchant; patterning of  
**fluorine-doped diamondlike  
carbon coatings**)
- IT 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-95-4,  
Magnesium, uses 7439-96-5, Manganese, uses 7439-98-7,  
Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium,  
uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses  
7440-15-5, Rhenium, uses 7440-22-4, Silver, uses 7440-25-7,  
Tantalum, uses 7440-33-7, Tungsten, uses 7440-42-8, Boron, uses  
7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8,  
Copper, uses 7440-56-4, Germanium, uses 7440-57-5, Gold, uses  
7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-67-7,  
Zirconium, uses 7727-37-9, **Nitrogen**, uses 13494-80-9,  
Tellurium, uses  
(addnl. **dopant; fluorine-doped  
diamondlike carbon coatings** with high  
dielec. strength, adhesion and hydrophobicity)
- IT 7440-44-0P, **Carbon**, preparation  
(**diamondlike films** contg. hydrogen, oxygen  
and silicon; **fluorine-doped  
diamondlike carbon coatings** with high  
dielec. strength, adhesion and hydrophobicity)
- IT 7429-90-5, Aluminum, processes 7440-32-6, Titanium, processes  
(**dopant/substrate; fluorine-doped  
diamondlike carbon coatings** with high  
dielec. strength, adhesion and hydrophobicity)
- IT 7782-41-4, **Fluorine**, uses  
(**dopant; fluorine-doped  
diamondlike carbon coatings** with high  
dielec. strength, adhesion and hydrophobicity)
- IT 25038-59-9, Polyethylene terephthalate, processes  
(flexible films; **fluorine-doped  
diamondlike carbon coatings** with high  
dielec. strength, adhesion and hydrophobicity)
- IT 7782-44-7, Oxygen, processes  
(**fluorine-doped diamondlike  
coatings** contg./ CF<sub>4</sub>-oxygen film patterning etchant;  
**fluorine-doped diamondlike  
carbon coatings** with high dielec. strength,  
adhesion and hydrophobicity)
- IT 7440-21-3, Silicon, processes  
(**fluorine-doped diamondlike  
coatings** contg./metalized substrate; **fluorine-  
doped diamondlike carbon  
coatings** with high dielec. strength, adhesion and  
hydrophobicity)
- IT 1333-74-0, Hydrogen, processes  
(**fluorine-doped diamondlike  
coatings** contg.; **fluorine-doped  
diamondlike carbon coatings** with high

- dielec. strength, adhesion and hydrophobicity)  
IT 25036-53-7, Kapton 61128-24-3, Ultem  
(metalized films; **fluorine-doped  
diamondlike carbon coatings** with high  
dielec. strength, adhesion and hydrophobicity)  
IT 156395-51-6 156395-52-7  
(precursor; **fluorine-doped  
diamondlike carbon coatings** with high  
dielec. strength, adhesion and hydrophobicity)  
IT 12597-69-2, Steel, processes  
(razor blades; **fluorine-doped  
diamondlike carbon coatings** with high  
dielec. strength, adhesion and hydrophobicity)  
IT 9002-84-0, Teflon 11121-90-7, Carbon steel, processes  
12597-68-1, Stainless steel, processes  
(substrates; **fluorine-doped  
diamondlike carbon coatings** with high  
dielec. strength, adhesion and hydrophobicity)
- L87 ANSWER 5 OF 19 HCA COPYRIGHT 2003 ACS on STN  
137:256027 Modifications of Low Dielectric Constant Fluorinated  
Amorphous **Carbon Films** by Multiple Plasma  
Treatments. Shieh, Jia-Min; Tsai, Kou-Chiang; Dai, Bau-Tong; Lee,  
Shih-Chin; Ying, Chih-Hung; Fang, Yan-Kun (National Nano Device  
Laboratories, Hsinchu, 30050, Taiwan). Journal of the  
Electrochemical Society, 149(7), G384-G390 (English) 2002. CODEN:  
JESOAN. ISSN: 0013-4651. Publisher: Electrochemical Society.
- AB This study investigated the material and elec. characteristics of  
hydrogen, nitrogen plasma-treated fluorinated amorphous carbon (**a-C:F**) **films** in relation to  
their thermal stability. Exptl. results indicate that the  
nitridation passivation layer and hydrogen passivated chem. bonds on  
the film surface effectively suppress thermal decompn. during high  
temp. annealing. Accordingly, a multiple plasma treatment on  
**a-C:F films** was proposed. In  
this treatment, nitrogen plasma nitridation was performed not only  
to passivate the **a-C:F films**  
against copper diffusion, but also to prevent the fluorine contents  
from penetrating into copper intermetals. Hydrogen plasma treatment  
then recovered unstable bonds formed during the nitridation process,  
thus yielding stable chem. structures and inducing hydrophobic  
characteristics of the film surface. The multiple plasma-treated  
**a-C:F films** demonstrated the  
desired performance as interlayer dielects.
- IT 7727-37-9, Nitrogen, properties  
(plasma; modifications of low dielec. const. fluorinated  
amorphous **carbon films** by multiple plasma  
treatments)
- RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

- CC 76-9 (Electric Phenomena)  
ST dielec const fluorinated amorphous **carbon film**;  
plasma treatment fluorinated amorphous **carbon film**  
IT Annealing  
Dielectric constant  
Passivation  
Thermal stability  
(modifications of low dielec. const. fluorinated amorphous  
**carbon films** by multiple plasma treatments)  
IT Nitriding  
(plasma; modifications of low dielec. const. fluorinated  
amorphous **carbon films** by multiple plasma  
treatments)  
IT 7440-44-0, Carbon, properties  
(fluorinated amorphous; modifications of low dielec. const.  
fluorinated amorphous **carbon films** by  
multiple plasma treatments)  
IT 7440-50-8, Copper, properties  
(modifications of low dielec. const. fluorinated amorphous  
**carbon films** by multiple plasma treatments)  
IT 1333-74-0, Hydrogen, properties 7727-37-9, Nitrogen,  
properties  
(plasma; modifications of low dielec. const. fluorinated  
amorphous **carbon films** by multiple plasma  
treatments)
- L87 ANSWER 6 OF 19 HCA COPYRIGHT 2003 ACS on STN  
137:171153 Protective overcoat layer for magnetic recording discs having  
enhanced corrosion resistance properties and coating process.  
Shukla, Nisha; Thangaraj, Raj; Stirniman, Michael Joseph; Gui, Jing  
(USA). U.S. Pat. Appl. Publ. US 2002119316 A1 20020829, 9 pp.  
(English). CODEN: USXXCO. APPLICATION: US 2001-15870 20011212.  
PRIORITY: US 2000-PV256858 20001219.
- AB The protective overcoat layer includes a doped or nondoped C  
-contg. **layer**, and a lubricant layer on top of the  
C-contg. **layer**, with the lubricant layer having a  
>CNO functional end group. The C-contg. **layer**  
may have a thickness <40 .ANG., while the lubricant layer may have a  
thickness <20 .ANG.. Suitable lubricants are selected from Z-disoc,  
Z-diac, Z-dol, Z-dol-TX and Z-tetraol, Z-15 and Z-25.
- IC ICM B05D005-12  
ICS C23C016-00; B05D001-36; B32B009-00
- NCL 428408000
- CC 42-10 (Coatings, Inks, and Related Products)  
Section cross-reference(s): 74, 77
- ST anticorrosive **carbon coating** magnetic recording  
disk; lubricant layer coating magnetic recording disk
- IT 7440-44-0, Carbon, uses

(H-, N- or F-doped; protective  
overcoat layer for magnetic recording disks)

L87 ANSWER 7 OF 19 HCA COPYRIGHT 2003 ACS on STN

137:97463 Amorphous hydrogenated **carbon films**:

effects of nitrogen and fluorine incorporation on the film  
microstructure and mechanical properties: a review. Freire, F. L.  
(Departamento de Fisica, Pontificia Universidade Catolica do Rio de  
Janeiro, Rio de Janeiro, RJ, 22453-970, Brazil). Journal of  
Non-Crystalline Solids, 304(1-3), 251-258 (English) 2002. CODEN:  
JNCSBJ. ISSN: 0022-3093. Publisher: Elsevier Science B.V..

AB The effects on the film microstructure and mech. properties due to  
nitrogen and fluorine incorporation into amorphous hydrogenated  
**carbon films** deposited by plasma enhanced chem.  
vapor deposition were reported. The chem. compn. was studied by ion  
beam techniques. The film d. was obtained combining the ion beam  
results and the film thickness detd. by profilometry. The  
modifications on the film microstructure were followed by Raman  
spectroscopy and the chem. bonding investigated by XPS. Special  
attention was devoted to the mech. properties, hardness and internal  
stress. We found that nitrogen incorporated **films**  
retained their **diamond-like** properties, despite  
the progressive graphitization upon nitrogen incorporation. In this  
case, the redn. of the internal stress without substantial changes  
in the film hardness was attributed to the redn. of network  
connectivity. The increase of the fluorine content results in  
polymer-like films, with smaller internal stress and hardness.

IT 7727-37-9, Nitrogen, uses 7782-41-4,  
Fluorine, uses

(dopant, carbon film; effects of  
N and F doping on structure and mech.  
properties of amorphous hydrogenated **diamond-  
like carbon films** prepd. by  
plasma-enhanced CVD)

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IT 7440-44-0, Carbon, properties  
(films; effects of N and F  
doping on structure and mech. properties of amorphous  
hydrogenated **diamond-like carbon  
films** prepd. by plasma-enhanced CVD)

RN 7440-44-0 HCA

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

CC 57-8 (Ceramics)

ST **carbon diamondlike film** structure mech  
property **nitrogen fluorine doping**

IT Hardness (mechanical)  
(effects of **N** and **F doping** on  
structure and mech. properties of amorphous hydrogenated  
**diamond-like carbon films**  
prepd. by plasma-enhanced CVD)

IT Stress, mechanical  
(residual; effects of **N** and **F doping**  
on structure and mech. properties of amorphous hydrogenated  
**diamond-like carbon films**  
prepd. by plasma-enhanced CVD)

IT 7727-37-9, **Nitrogen**, uses 7782-41-4,  
**Fluorine**, uses  
(**dopant**, **carbon film**; effects of  
**N** and **F doping** on structure and mech.  
properties of amorphous hydrogenated **diamond-**  
**like carbon films** prep. by  
plasma-enhanced CVD)

IT 7440-44-0, **Carbon**, properties  
(**films**; effects of **N** and **F**  
**doping** on structure and mech. properties of amorphous  
hydrogenated **diamond-like carbon**  
**films** prep. by plasma-enhanced CVD)

L87 ANSWER 8 OF 19 HCA COPYRIGHT 2003 ACS on STN

136:62332 Surface modification of low dielectric fluorinated amorphous  
**carbon films** by nitrogen plasma treatment. Yang,  
Sung-Hoon; Kim, Heondo; Park, Jong-Wan (Division of Materials  
Science and Engineering, Hanyang University, Seoul, 133-791, S.  
Korea). Japanese Journal of Applied Physics, Part 1: Regular  
Papers, Short Notes & Review Papers, 40(10), 5990-5993 (English)  
2001. CODEN: JAPNDE. Publisher: Japan Society of Applied Physics.

AB The effects of N post-plasma treatment on the properties of  
fluorinated amorphous C (**a-C:F**)  
**films** were studied. The **a-C:F**  
**films** were prep. by an electron cyclotron resonance CVD  
(ECRCVD) system (ASTeX AX4505) using a gas mixt. of fluorocarbon  
(C2F6) and hydrocarbon (CH4). The post-plasma treatment was carried  
out for various strengths and durations after deposition without  
breaking the vacuum seal. As the power and time of the treatments  
increased, the F concn. of the film surface decreased, yet the  
surface energy increased sharply. The dielec. const. and the  
refractive index of **a-C:F**  
**films** remain nearly const. regardless of the plasma  
treatment power. The plasma treatment of **a-C:**



**F films** produces a more reactive surface and affected the F concn. of the surface, the structure of chem. bonding and the elec. properties.

IT 7727-37-9, Nitrogen, reactions  
(surface modification of ECR-plasma-deposited low dielec.  
fluorinated amorphous **carbon films** by  
nitrogen plasma treatment)

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

$N \equiv N$

CC 76-10 (Electric Phenomena)  
Section cross-reference(s): 66

ST surface nitriding plasma fluorinated **carbon dielec film**; contact angle surface nitriding plasma fluorinated **carbon dielec film**; refractive index surface nitriding plasma fluorinated **carbon dielec film**

IT Adhesion, physical  
Diffusion barrier  
(adhesion of fluorinated **carbon films** on tantalum diffusion barrier after plasma nitriding)

IT Bond  
(carbon-fluorine; surface modification of ECR-plasma-deposited low dielec. fluorinated amorphous **carbon films** by nitrogen plasma treatment)

IT Contact angle  
(contact angle of water and diiodomethane with fluorinated **carbon dielec. films** after plasma nitriding)

IT Nitriding  
Vapor deposition process  
(plasma; surface modification of ECR-plasma-deposited low dielec. fluorinated amorphous **carbon films** by nitrogen plasma treatment)

IT Dielectric constant  
Electron cyclotron resonance  
IR spectra  
Refractive index  
Surface energy  
X-ray photoelectron spectra  
(surface modification of ECR-plasma-deposited low dielec. fluorinated amorphous **carbon films** by nitrogen plasma treatment)

IT 7440-25-7, Tantalum, processes  
(adhesion of fluorinated **carbon films** on tantalum diffusion barrier after plasma nitriding)

IT 75-11-6, Diiodomethane 7732-18-5, Water, properties  
(contact angle of water and diiodomethane with fluorinated **carbon dielec. films** after plasma nitriding)

IT 7440-44-0P, Carbon, properties  
(surface modification of ECR-plasma-deposited low dielec.

- fluorinated amorphous **carbon films** by  
nitrogen plasma treatment)
- IT 7782-41-4P, Fluorine, uses  
(surface modification of ECR-plasma-deposited low dielec.  
fluorinated amorphous **carbon films** by  
nitrogen plasma treatment)
- IT 74-82-8, Methane, reactions 76-16-4 7727-37-9, Nitrogen,  
reactions  
(surface modification of ECR-plasma-deposited low dielec.  
fluorinated amorphous **carbon films** by  
nitrogen plasma treatment)
- L87 ANSWER 9 OF 19 HCA COPYRIGHT 2003 ACS on STN  
136:29152 Electromagnetic wave-sensitive electrophotographic  
photoreceptor, their detachable process cartridges, and their  
printers. Niina, Hiroaki; Aoki, Makoto; Furushima, Satoshi;  
Tsuchida, Shinji (Canon Inc., Japan). Jpn. Kokai Tokkyo Koho JP  
2001337472 A2 20011207, 22 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 2000-153639 20000524.
- AB The photoreceptor consists of (A) a support having thereon (B) a  
photoconductive layer of H and/or halogen-doped .alpha.-Si and (C)  
a surface **layer** composed of a 1st layer area  
which substantially transports charges and a 2nd layer area which  
substantially absorbs lights and generates charges and is  
constituted of 2 layer areas of different optical band gaps, Group  
IIIB elements being contained in the one on the surface layer side  
unevenly in the layer thickness direction. Electrophotog.  
properties such as charging, sensitivity, optical memory, etc., is  
enhanced while image deletion is suppressed.
- IT 7727-37-9, Nitrogen, uses 7782-41-4,  
Fluorine, uses  
(dopants; electromagnetic wave-sensitive electrophotog.  
photoreceptor, their detachable process cartridges, and their  
printers)
- RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

- RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

- IC ICM G03G005-08  
ICS G03G005-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
IT 7440-44-0, Carbon, uses 7727-37-9, Nitrogen,  
uses 7782-41-4, Fluorine, uses 7782-44-7,

Oxygen, uses

(**dopants**; electromagnetic wave-sensitive electrophotog. photoreceptor, their detachable process cartridges, and their printers)

L87 ANSWER 10 OF 19 HCA COPYRIGHT 2003 ACS on STN

135:350529 Amorphous silicon-type multilayer photoreceptors, electrophotographic apparatus having brushes for cleaning them, and electrophotographic method. Yamazaki, Koji; Kawamura, Kunimasa; Karaki, Tetsuya; Nakayama, Yuji (Canon Inc., Japan). Jpn. Kokai Tokkyo Koho JP 2001312084 A2 20011109, 28 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-133531 20000502.

AB The app., which can reduce the frequency of maintenance work, contains .gtoreq.1 fur brushes for cleaning a photoreceptor consisting of (A) a cylindrical elec. conductive substrate, (B) a barrier layer of amorphous Si contg. H and Group 3B element or Group 5B element, (C) a photoconductive **layer**, (D) a 1st surface layer of amorphous SiC contg. H and/or halogen, and (E) a 2nd surface **layer** of amorphous C contg. H and/or halogen, in this order. The photoreceptor satisfies that the total thickness of D and E = 0.2-0.002 .mu.m, thickness of B 0.5-10 .mu.m, thickness of E 0.01-1 .mu.m, av. gradient (.DELTA.a) of E 0.006-1.0, and the height of surface protrusions .ltoreq.5.0 .mu.m. The app. may have a means for recovering a pos. charging developer from the photoreceptor surface and a means for returning the developer to a developing means.

IC ICM G03G005-08

ICS G03G005-08; G03G021-10

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 7782-41-4P, **Fluorine**, preparation

(C **doped** with, photoreceptor; electrophotog. app. having fur brushes for cleaning amorphous Si-type multilayer photoreceptors)

IT 7440-42-8, Boron, uses 7727-37-9, **Nitrogen**, uses

(Si **doped** with, photoreceptor; electrophotog. app. having fur brushes for cleaning amorphous Si-type multilayer photoreceptors)

IT 7440-44-0P, Carbon, preparation

(**doped** with F and H, amorphous, photoreceptor; electrophotog. app. having fur brushes for cleaning amorphous Si-type multilayer photoreceptors)

L87 ANSWER 11 OF 19 HCA COPYRIGHT 2003 ACS on STN

135:281404 Deposition temperature effect on thermal stability of fluorinated amorphous **carbon films** utilized as low-K dielectrics. Ariel, N.; Eizenberg, M.; Wang, Y.; Murarka, S. P. (Department of Materials Engineering, Technion - Israel Institute of Technology, Haifa, 32000, Israel). Materials Science in Semiconductor Processing, 4(4), 383-391 (English) 2001. CODEN: MSSPFQ. ISSN: 1369-8001. Publisher: Elsevier Science Ltd..

AB Fluorinated amorphous C **films** (.alpha.-F:

C) were deposited by high-d. plasma-CVD (HDP-CVD) using C<sub>4</sub>F<sub>8</sub> and CH<sub>4</sub> as precursors. The deposition process was performed at two temps.: .apprx.200 and .apprx.350.degree.. In order to study the thermal stability of the films, the samples were annealed at 400 or 500.degree. for 30 min in an N<sub>2</sub> ambience. The films deposited at .apprx.350.degree. were more thermally stable than those deposited at .apprx.200.degree.. Both deposition conditions produced

.alpha.-F:C films with a C:

F ratio of 1.7 and a very low content of H; The bonding types identified by XPS were C-C/C-H, C-CF, CF-CF and C-F in all the .alpha.-F:C films and in addn. CF<sub>2</sub> bond was

found in the as-deposited films deposited at .apprx.200.degree..

The films compn. was maintained after annealing at 400.degree..

However, after 500.degree. annealing, in the low-temp. deposited films, F out-diffusion was obsd. in large amts. compared to the very small changes obsd. in the high-temp. films. The .alpha.-F:

C films remained amorphous at least up to

500.degree.. The dielec. const. of the low-temp. deposited films

was .apprx.2.7 after 400.degree. annealing, and increased after

500.degree. anneal to .apprx.9.3. The high-temp. deposited films

had a higher dielec. const. of .apprx.2.7-3, remaining stable after

the various thermal treatments employed. These results indicate a

trade-off between thermal stability and lowering the dielec. const.

IT 7727-37-9, Nitrogen, uses

(deposition temp. effect on thermal stability of fluorinated amorphous **carbon films** utilized as low-K dielecs.)

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

CC 76-10 (Electric Phenomena)

Section cross-reference(s): 75

IT Annealing

Bond

Dielectric constant

Dielectric films

Electric capacitance-potential relationship

Thermal stability

(deposition temp. effect on thermal stability of fluorinated amorphous **carbon films** utilized as low-K dielecs.)

IT Diffusion

(out-diffusion, fluorine; deposition temp. effect on thermal stability of fluorinated amorphous **carbon films** utilized as low-K dielecs.)

IT Vapor deposition process

(plasma; deposition temp. effect on thermal stability of fluorinated amorphous **carbon films** utilized as low-K dielecs.)

- IT 74-82-8, Methane, uses 115-25-3, Octafluorocyclobutane  
7727-37-9, Nitrogen, uses  
(deposition temp. effect on thermal stability of fluorinated  
amorphous **carbon films** utilized as low-K  
dielecs.)
- IT 7440-44-0P, Carbon, properties  
(deposition temp. effect on thermal stability of fluorinated  
amorphous **carbon films** utilized as low-K  
dielecs.)
- IT 7782-41-4, Fluorine, processes  
(out-diffusion; deposition temp. effect on thermal stability of  
fluorinated amorphous **carbon films** utilized  
as low-K dielecs.)
- L87 ANSWER 12 OF 19 HCA COPYRIGHT 2003 ACS on STN  
135:172975 Electrophotographic photoreceptor with **carbon**  
surface **layer**, image-forming apparatus, process cartridge,  
and image forming method. Ikuno, Hiroshi; Yano, Hidetoshi;  
Tokumasu, Takahiko; Akafuji, Masahiko; Kai, Hajime; Nagame, Hiroshi;  
Suzuki, Tetsuro (Ricoh Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP  
2001228644 A2 20010824, 14 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 2000-40760 20000218.
- AB In the photoreceptor comprising a conductive substrate coated with a  
photosensitive layer and a surface protective layer, and  
injection-charged by applying elec. voltage to a charging material  
contacted with the photoreceptor, the surface protective layer has  
hydrogen-contg. diamond-type and/or amorphous carbon structure. The  
process cartridge, image forming app. and method using the  
photoreceptor and the injection charging method are also claimed.  
Generation of ozone and nitrogen oxide is prevented and the  
photoreceptor gives clear images in repeated use using less elec.  
power.
- IC ICM G03G005-147
- CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)
- ST electrophotog photoreceptor surface **layer carbon**
- IT 1333-74-0, Hydrogen, uses 7553-56-2, Iodine, uses 7723-14-0,  
Phosphorus, uses 7726-95-6, Bromine, uses 7727-37-9,  
**Nitrogen**, uses 7782-41-4, **Fluorine**, uses  
7782-50-5, Chlorine, uses  
(carbon **doped** with; electrophotog. photoreceptor with  
surface layer comprising diamond and/or amorphous carbon)
- L87 ANSWER 13 OF 19 HCA COPYRIGHT 2003 ACS on STN  
135:144663 Electrophotography, its apparatus, and its photoreceptors  
having high-sensitivity photoconductive layers. Koshima, Satoshi;  
Tsuchida, Nobufumi; Aoki, Makoto; Niina, Hiroaki (Canon Inc.,  
Japan). Jpn. Kokai Tokkyo Koho JP 2001209198 A2 20010803, 24 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-17104 20000126.
- AB The photoreceptors have Group IIIA-element-doped a-Si:H  
photoconductive layers and satisfy a defined relationship among  
thickness of light-absorbing regions, photoreceptor rotation speed,

cylindrical photoreceptor diam., and location of preexposure light sources and that of charging app. The photoreceptors may have a-Si skin **layers** contg. C, O, and/or N.

IT 7782-41-4, **Fluorine**, uses  
(**dopants** in photoconductive layers; electrophotog.  
photoreceptors having high-sensitivity photoconductive layers)  
RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IT 7727-37-9, **Nitrogen**, uses  
(**dopants** in surface layers of photoreceptors;  
electrophotog. photoreceptors having high-sensitivity  
photoconductive layers)  
RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

IC ICM G03G005-08  
ICS G03G005-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 76  
ST electrophotog photoreceptor hydrogenated amorphous silicon  
photoconductor; **fluorine boron doped**  
photoconductor layer photoreceptor; carbon doped amorphous surface  
electrophotog photoreceptor  
IT 7440-42-8, Boron, uses 7440-44-0, Carbon, uses 7782-41-4  
, **Fluorine**, uses  
(**dopants** in photoconductive layers; electrophotog.  
photoreceptors having high-sensitivity photoconductive layers)  
IT 7727-37-9, **Nitrogen**, uses 7782-44-7, Oxygen,  
uses  
(**dopants** in surface layers of photoreceptors;  
electrophotog. photoreceptors having high-sensitivity  
photoconductive layers)

L87 ANSWER 14 OF 19 HCA COPYRIGHT 2003 ACS on STN  
135:34697 Sensor for the condition determination of characteristics of  
mechanical components by using amorphous **carbon**  
**layers** with piezoresistive properties. Luethje, Holger;  
Brand, Jochen (Fraunhofer-Gesellschaft Zur Foerderung Der  
Angewandten Forschung E.V., Germany). Ger. Offen. DE 19954164 A1  
20010613, 20 pp. (German). CODEN: GWXXBX. APPLICATION: DE  
1999-19954164 19991110.

AB An amorphous **C layer** with piezoresistive  
properties is used as a sensor for measurement of actual condition  
values (e.g., force, pressure, mech. loading) on surfaces of mech.

components. The layer is connected to a measuring app. and is preferably used as a pressure or thermal sensor for tools and machine parts. The amorphous **C layer** has graphitic structures with sp<sup>2</sup>-hybridization in combination with diamond-like structures with sp<sup>3</sup>-hybridization. The amorphous **C layer** is doped with 0.01-47 at.% metallic and/or nonmetallic element.

IT 7727-37-9, **Nitrogen**, uses 7782-41-4, **Fluorine**, uses  
 (dopant in sensor for condition detn. of characteristics of mech. components by using amorphous **carbon layers** with piezoresistive properties)  
 RN 7727-37-9 HCA  
 CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
 CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F—F

IC ICM G01L001-20  
 ICS G01L009-06; G01N003-56; C23C030-00  
 CC 47-8 (Apparatus and Plant Equipment)  
 ST amorphous **carbon layer** sensor tool loading;  
 machine loading amorphous **carbon layer** sensor  
 IT Sensors  
 (for condition detn. of characteristics of mech. components by using amorphous **carbon layers** with piezoresistive properties)  
 IT Machinery parts  
 Measuring apparatus  
 Testing of materials  
 Tools  
 (sensor for condition detn. of characteristics of mech. components by using amorphous **carbon layers** with piezoresistive properties)  
 IT 1333-74-0, Hydrogen, uses 7429-90-5, Aluminum, uses 7439-92-1, Lead, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-18-8, Ruthenium, uses 7440-21-3, Silicon, uses 7440-22-4, Silver, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-37-1, Argon, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-57-5, Gold, uses 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses 7727-37-9, **Nitrogen**, uses 7782-41-4, **Fluorine**, uses 7782-44-7, Oxygen, uses  
 (dopant in sensor for condition detn. of

- characteristics of mech. components by using amorphous **carbon layers** with piezoresistive properties)
- IT 7440-44-0, Carbon, uses  
(sensor for condition detn. of characteristics of mech. components by using amorphous **carbon layers** with piezoresistive properties)
- L87 ANSWER 15 OF 19 HCA COPYRIGHT 2003 ACS on STN
- 134:45810 **Diamond-like carbon coating** doped with Si and N, and suitable for multilayer applications. Eufinger, Stephan; Sercu, Marc; Neerinck, Dominique (N.V. Bekaert S.A., Belg.). PCT Int. Appl. WO 2000075394 A1 20001214, 24 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, DE, DK, DM, DZ, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 2000-EP4438 20000516. PRIORITY: EP 1999-201811 19990608.
- AB The doped **diamond-like C coating** suitable for plasma deposition and multilayered structure contains C 30-90, Si 5-50, and N 5-40 at.% with minor H, and optionally minor F and/or a transition metal. The precursor for the doped **C coating** is optionally a silazane, esp. with C1-20 hydrocarbon vapor. The **diamond-like coating** shows a low surface energy, high hardness, and good adhesion to substrates, and is suitable for an interlayer in conventional thick **coating** with hard C. The hard coating is applied in a chamber app. by: (a) plasma etching of a substrate by inert-gas ions; (b) feeding the suitable gas mixt. into the chamber; and (c) forming the plasma for coating deposition with neg.-bias voltage, esp. with RF excitation at 1-28 MHz. The coatings typically 2-20 .mu.m thick with low residual stress and high adhesion can be obtained by alternating deposition of the doped and conventional **diamond-like carbon layers**. The hard coating applied by plasma deposition from 1,1,3,3-tetramethyldisilazane vapor contains C 43, Si 40, and N 14 at.% with minor H and O at 3 at.%.
- IC ICM C23C016-30  
ICS C23C028-04
- CC 57-8 (Ceramics)
- ST diamond like **carbon** multilayer plasma **coating**;  
silicon doped hard **carbon coating** plasma;  
**nitrogen doped** hard **carbon coating** plasma; silazane plasma **coating** hard **carbon** doping
- IT Transition metals, uses  
(carbon doped with, for plasma **coating**; **carbon**



- doped with Si and N for multilayer **diamond-like hard coating** in plasma app.)
- IT. Coating process  
(plasma spraying, **diamond-like films** ; **carbon** doped with Si and N for multilayer **diamond-like hard coating** in plasma app.)
- IT Silazanes  
(plasma, **diamond-like films** from; **carbon** doped with Si and N for multilayer **diamond-like hard coating** in plasma app.)
- IT 1333-74-0, Hydrogen, uses 7440-21-3, Silicon, uses 7727-37-9, Nitrogen, uses 7782-41-4, Fluorine, uses  
(**carbon doped** with, for plasma **coating**; **carbon** doped with Si and N for multilayer **diamond-like hard coating** in plasma app.)
- IT 7440-44-0, Carbon, uses  
(**diamond-like, coating** with; **carbon** doped with Si and N for multilayer **diamond-like hard coating** in plasma app.)
- IT 7782-40-3, Diamond, uses  
(**films, diamond-like**; **carbon** doped with Si and N for multilayer **diamond-like hard coating** in plasma app.)
- IT 999-97-3, Hexamethyldisilazane 15933-59-2, 1,1,3,3-Tetramethyldisilazane  
(plasma from, for hard **coating**; **carbon** doped with Si and N for multilayer **diamond-like hard coating** in plasma app.)
- IT 71-43-2, Benzene, processes  
(silazane and, plasma from; **carbon** doped with Si and N for multilayer **diamond-like hard coating** in plasma app.)

L87 ANSWER 16 OF 19 HCA COPYRIGHT 2003 ACS on STN

133:154301 Effects of nitrogen incorporation on structural properties of fluorinated amorphous **carbon films**. Yokomichi, H.; Masuda, A. (Faculty of Engineering, Department of Electronics and Informatics, Toyama Prefectural University, Toyama, 939-0398, Japan). Journal of Non-Crystalline Solids, 271(1,2), 147-151 (English) 2000. CODEN: JNCSBJ. ISSN: 0022-3093. Publisher: Elsevier Science B.V..

AB Nitrogen-incorporated fluorinated amorphous carbon (a-C:F:N) **films** were prep'd. by plasma chem. vapor deposition at room temp. using a CF<sub>4</sub>, CH<sub>4</sub> and N<sub>2</sub> gas mixt. Structural, optical and defect properties of these films were investigated by IR absorption, XPS, UV-visible absorption, ellipsometry, and ESR measurements. Carbon, fluorine and nitrogen concns., of the a-C:F:N **films** ranged from (33, 67, 0, resp.) to (41, 46, 13, resp.) with an increase in nitrogen gas flow rate. The dielec. const. of these films estd. by ellipsometry was <2.5. From IR measurements an

intensity ratio of CF<sub>2</sub> to CF for a-C:F:N films was comparable to that for a-C:F film with larger fluorine concns. Furthermore, the IR band known as the Raman D band was obsd., whereas no IR signal due to Raman G band was obsd. Based on these results, we suggest that a-C:F:N films have a low-dimensional structure without cryst. regions. The dangling bond d. decreased and the optical band gap was approx. const. with increasing nitrogen concn..

IT 7727-37-9, Nitrogen, uses  
(dopant, carbon films; effects of  
nitrogen incorporation on structural properties of fluorinated  
amorphous carbon films)  
RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

IT 7440-44-0, Carbon, processes  
(films; effects of nitrogen incorporation on structural  
properties of fluorinated amorphous carbon  
films)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

CC 57-8 (Ceramics)  
Section cross-reference(s): 76  
ST fluorinated amorphous carbon film structure  
optical defect property nitrogen  
IT Absorption spectra  
Dielectric constant  
(effects of nitrogen incorporation on structural properties of  
fluorinated amorphous carbon films)  
IT Band gap  
(optical; effects of nitrogen incorporation on structural  
properties of fluorinated amorphous carbon  
films)  
IT 7727-37-9, Nitrogen, uses  
(dopant, carbon films; effects of  
nitrogen incorporation on structural properties of fluorinated  
amorphous carbon films)  
IT 7440-44-0, Carbon, processes  
(films; effects of nitrogen incorporation on structural  
properties of fluorinated amorphous carbon  
films)

**coatings**, and method for manufacturing the coated substrates. Bray, Donald J.; Venkatraman, Chandra; Outten, Craig A.; Halter, Christopher G.; Goel, Arvind (Advanced Refractory Technologies, Inc., USA). PCT Int. Appl. WO 9929477 A1 19990617, 66 pp. DESIGNATED STATES: W: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GE, GH, GM, HR, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG. (English). CODEN: PIXXD2. APPLICATION: WO 1998-US25631 19981203. PRIORITY: US 1997-67567 19971205; US 1997-67750 19971205; US 1998-133951 19980814; US 1998-204441 19981202.

AB The **F-doped coatings** include a **diamondlike** compn. contg. C, Si, O, H, and F on various substrates. Preferred substrates include flexible polymeric substrates, precision-edged substrates, and electrosurgical instruments. The manuf. of substrates coated with a **F-doped diamondlike coating** comprises positioning the substrates in a vacuum chamber and depositing a diamondlike compn. contg. C, Si, O, H, and F on the substrate by codeposition of clusterless particle beams comprised of ions, atoms, or radicals of the C, Si, O, H, and F, the mean free path of each particle species being in excess of the distance between its source and the coating growing on the surface of the substrate. A Kapton film was coated with a **F-doped diamondlike coating** by introducing 3,3,3-trifluoropropylmethoxysiloxane-dimethoxysiloxane copolymer precursor into an Ar plasma. A 0.5-.mu.m-thick coating was obtained in 60 min and had surface energy 20.4 dyne/cm, dielec. strength >1 MV/cm, and contact angle with water 91.degree..

IC ICM B26B021-54  
ICS C30B029-02; B24D003-02; B01J003-06; B01J003-08; C23C016-00; B05D005-12; H05H001-24; B32B003-00; B32B007-00; B32B009-00; B32B009-04; B32B015-00; B32B017-00; B32B019-00

CC 42-10 (Coatings, Inks, and Related Products)  
Section cross-reference(s): 38, 49, 55, 57, 63, 76

ST **fluorine doped diamondlike coating**; polymer film doped **diamondlike coating**; titanium **fluorine dopant coating**; trifluoropropylmethoxysiloxane decompn coating; dimethoxysiloxane copolymer decompn coating; metal **fluorine doped diamondlike coating**; razor blade doped **diamondlike coating**; knife doped **diamondlike coating**; cutting tool doped **diamondlike coating**; surgical instrument doped **diamondlike coating**; carbon silicon oxygen hydrogen fluorine coating

IT Group IB elements  
Group IIB elements  
Group IIIB elements

Group IVB elements  
Group VB elements  
Group VIB elements  
Group VIIB elements  
Group VIII elements  
    (addnl. **dopant**; in **fluorine-doped diamondlike coating** formation on plastic films, precision-edged substrates, and electrosurgical instruments)

IT Polyesters, uses  
Polyimides, uses  
    (films; plasma deposition process for **fluorine-doped diamondlike coating** formation on)

IT Tools  
    (industrial; plasma deposition process for **fluorine-doped diamondlike coating** formation on)

IT Medical equipment  
    (instruments; plasma deposition process for **fluorine-doped diamondlike coating** formation on)

IT Capacitors  
    (manuf. of; **fluorine-doped diamondlike coating** formation by plasma deposition process in)

IT Resistors  
    (manuf. of; **fluorine-doped** patterned **diamondlike coating** formation by plasma deposition process in)

IT Dielectric strength  
Electric resistance  
Surface energy  
    (of **fluorine-doped diamondlike coating** on plastic films, precision-edged substrates, and electrosurgical instruments)

IT Knives  
Plastic films  
    (plasma deposition process for **fluorine-doped diamondlike coating** formation on)

IT Metals, uses  
    (plasma deposition process for **fluorine-doped diamondlike coating** formation on)

IT Coating process  
    (plasma spraying; for **fluorine-doped diamondlike coating** formation on plastic films, precision-edged substrates, and electrosurgical instruments)

IT Polyimides, uses  
Polyimides, uses  
    (polyamide-, films; plasma deposition process for **fluorine-doped diamondlike coating** formation on)

IT Polyimides, uses

- Polyimides, uses  
(polyether-, films; plasma deposition process for **fluorine-doped diamondlike coating** formation on)
- IT Polyamides, uses  
Polyamides, uses  
Polyethers, uses  
Polyethers, uses  
(polyimide-, films; plasma deposition process for **fluorine-doped diamondlike coating** formation on)
- IT Tools  
(razor blades; plasma deposition process for **fluorine-doped diamondlike coating** formation on)
- IT Contact angle  
(with water; of **fluorine-doped diamondlike coating** on plastic films, precision-edged substrates, and electrosurgical instruments)
- IT 7429-90-5, Aluminum, uses 7439-88-5, Iridium, uses 7439-89-6, Iron, uses 7439-95-4, Magnesium, uses 7439-96-5, Manganese, uses 7439-98-7, Molybdenum, uses 7440-02-0, Nickel, uses 7440-03-1, Niobium, uses 7440-05-3, Palladium, uses 7440-06-4, Platinum, uses 7440-15-5, Rhenium, uses 7440-22-4, Silver, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-42-8, Boron, uses 7440-47-3, Chromium, uses 7440-48-4, Cobalt, uses 7440-50-8, Copper, uses 7440-56-4, Germanium, uses 7440-57-5, Gold, uses 7440-58-6, Hafnium, uses 7440-62-2, Vanadium, uses 7440-67-7, Zirconium, uses 7727-37-9, **Nitrogen**, uses 10043-11-5, Boron nitride (BN), uses 13494-80-9, Tellurium, uses 24094-93-7, Chromium nitride (CrN) 24304-00-5, Aluminum nitride 25583-20-4, Titanium nitride (TiN) 25658-42-8, Zirconium nitride (ZrN)  
(addnl. dopant; in **fluorine-doped diamondlike coating** formation on plastic films, precision-edged substrates, and electrosurgical instruments)
- IT 7782-41-4, Fluorine, uses  
(comps. contg.; in **fluorine-doped diamondlike coating** formation on plastic films, precision-edged substrates, and electrosurgical instruments, by plasma deposition)
- IT 156395-51-6 227001-75-4  
(decompn. of; in **fluorine-doped diamondlike coating** formation on plastic films, precision-edged substrates, and electrosurgical instruments by plasma deposition)
- IT 61128-24-3, Ultem  
(films, metalized; plasma deposition process for **fluorine-doped diamondlike coating** formation on)
- IT 25036-53-7, Kapton 25038-59-9, uses  
(films; plasma deposition process for **fluorine-**

**doped diamondlike coating formation**  
on)

IT 1333-74-0, Hydrogen, uses 7440-21-3, Silicon, uses 7440-44-0,  
Carbon, uses 7782-44-7, Oxygen, uses  
(**fluorine-doped diamondlike**  
**coatings** contg., formation of; on plastic films,  
precision-edged substrates, and electrosurgical instruments, by  
plasma deposition)

L87 ANSWER 18 OF 19 HCA COPYRIGHT 2003 ACS on STN

123:216662 Magnetic recording materials, manufacturing, and plasma vapor  
film deposition thereof. Ueda, Hideyuki; Kuwabara, Kenji; Seki,  
Hiroshi; Takahashi, Kyoshi; Odagiri, Masaru; Murai, Mikio  
(Matsushita Electric Ind Co Ltd, Japan). Jpn. Kokai Tokkyo Koho JP  
07121855 A2 19950512 Heisei, 12 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1993-262177 19931020.

AB The process involves (1) forming a ferromagnetic metal thin-film on  
one side of a nonmagnetic substrate, (2) forming a backcoat layer on  
the other side of the substrate, and (3) subsequently reposting a  
**C film** which contains F, Si, or **N**  
**dopant** with its **F** and Si/N concns. decreased and  
increased, resp., from its surface towards depth.

IT 7727-37-9, **Nitrogen**, uses 7782-41-4,  
**Fluorine**, uses

(**dopant** in **carbon backcoat layer**  
for magnetic recording materials)

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM G11B005-66

ICS C23C016-50; G11B005-72; G11B005-84; H01L021-205

CC 77-8 (Magnetic Phenomena)

ST **carbon backcoat film** dopant concn distribution;  
ferromagnetic metal magnetic recording material backcoating

IT Coating process  
(plasma vapor deposition, back-; of **carbon backcoat**  
**film** for magnetic recording materials)

IT Recording materials  
(magnetic, cobalt; **carbon backcoat film**  
deposition for)

IT 107-11-9, Allylamine 110-86-1, Pyridine, properties 115-25-3,  
Octafluorocyclobutane 116-15-4, Hexafluoropropylene 681-84-5,  
Tetramethoxysilane 999-97-3, Hexamethyldisilazane 16610-52-9,

- Hexamethoxysilazane 30110-74-8, Tetramethyldisiloxane  
(**carbon backcoat film** formation for magnetic  
recording materials by plasma vapor deposition with argon and)  
IT 7440-21-3, Silicon, uses 7727-37-9, **Nitrogen**,  
uses 7782-41-4, **Fluorine**, uses  
(**dopant in carbon backcoat layer**  
for magnetic recording materials)
- L87 ANSWER 19 OF 19 HCA COPYRIGHT 2003 ACS on STN  
94:159784 Chemical modification of hydrogenated amorphous silicon.  
Tanner, D. P.; Johnson, G. R.; Sefcik, M. D. (Monsanto Corp. Res.  
Lab., St. Louis, MO, 63166, USA). Solar Energy Materials, 3(4),  
533-46 (English) 1980. CODEN: SOEMDH. ISSN: 0165-1633.
- AB The glow discharge decompn. of SiH<sub>4</sub>-modifying gas mixts. was used to  
prep. thin films with properties which in some cases differ  
significantly from those reported for glow discharge-prepd.  
hydrogenated amorphous Si. The optical absorption edge, index of  
refraction, and light and dark resistivities are reported for a no.  
of modified thin **films** using B, C, Ge, N, F and  
Cl in different mol. forms. A method is described for prepg. p-type  
photoconductive amorphous materials which may be useful in  
semiconducting and photovoltaic devices.
- CC 52-2 (Electrochemical, Radiational, and Thermal Energy Technology)  
Section cross-reference(s): 73
- ST silicon solar cell amorphous doping; hydrogenated amorphous silicon  
solar cell; boron doping silicon solar cell; carbon doping silicon  
solar cell; germanium doping silicon solar cell; **nitrogen**  
**doping** silicon solar cell; **fluorine doping**  
silicon solar cell; chlorine doping silicon solar cell

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- L88 ANSWER 1 OF 31 HCA COPYRIGHT 2003 ACS on STN  
138:264353 Method of forming an amorphous hydrogenated **carbon**  
**film**. Goncalves Neto, Luiz; Mansano, Ronaldo D.; Cirino,  
Giuseppe A.; Zambom, Luiz S.; Verdonck, Patrick B. (Fundacao de  
Amparo a Pesquisa do Estado de Sao Paulo, Brazil). PCT Int. Appl.  
WO 2003027350 A1 20030403, 16 pp. DESIGNATED STATES: W: AE, AG,  
AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU,  
CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID,  
IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA,  
MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE,  
SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA,  
ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF,  
CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC,  
ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2.  
APPLICATION: WO 2002-BR67 20020508. PRIORITY: BR 2001-5474  
20010926.
- AB The invention relates to a method of forming an amorphous  
hydrogenated **carbon film** by a low-temp.,  
low-power, and low-vacuum process. The process involves steps of

(i) promoting contact between an electrode and the substrate on the surface of which the amorphous hydrogenated **carbon film** is to be deposited; (ii) providing a vacuum environment contg. the electrode and a second carbonaceous electrode in the presence of a precursor for the amorphous hydrogenated **carbon film**; and (iii) providing a radio-frequency or d.c. discharge between the two electrodes of .gtoreq.0.01 W/cm<sup>2</sup> of surface of the carbonaceous electrode, where the vacuum is sufficient to provide plasma generation between the two electrodes.

IT 7727-37-9, Nitrogen, processes  
(**dopant**, deposition atm.; method of forming an amorphous hydrogenated **carbon film**)  
RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

IT 7440-44-0P, Carbon, uses  
(hydrogenated **film**, sputtering electrode material; method of forming an amorphous hydrogenated **carbon film**)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 7782-41-4, Fluorine, uses  
(method of forming an amorphous hydrogenated **carbon film**)  
RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F--F

IC ICM C23C014-34  
ICS C23C016-26  
CC 76-11 (Electric Phenomena)  
Section cross-reference(s): 38, 39, 40, 43, 53, 57  
ST amorphous hydrogenated **carbon film**  
IT Hydrocarbons, reactions  
(chlorofluorocarbons, deposition precursor; method of forming an amorphous hydrogenated **carbon film**)  
IT Filaments  
Textiles  
(composed of amorphous hydrogenated **carbon film** ; method of forming an amorphous hydrogenated **carbon film**)  
IT Fibers  
(composed of amorphous hydrogenated **carbon film**)



- ; method of forming an amorphous hydrogenated **carbon film**)
- IT Hydrocarbons, uses  
(deposition precursor, sputtering electrode material; method of forming an amorphous hydrogenated **carbon film**)
- IT Alcohols, reactions  
Ketones, reactions  
(deposition precursor; method of forming an amorphous hydrogenated **carbon film**)
- IT Crystals  
Wood  
(film deposited onto; method of forming an amorphous hydrogenated **carbon film**)
- IT Glass, uses  
Minerals, uses  
Organic compounds, uses  
Rubber, uses  
(film deposited onto; method of forming an amorphous hydrogenated **carbon film**)
- IT Polycarbonates, uses  
(lens, film deposited onto; method of forming an amorphous hydrogenated **carbon film**)
- IT **Doping**  
(method of forming an amorphous hydrogenated **carbon film**)
- IT Metals, uses  
(nonferrous, film deposited onto; method of forming an amorphous hydrogenated **carbon film**)
- IT Vapor deposition apparatus  
Vapor deposition process  
(plasma; method of forming an amorphous hydrogenated **carbon film**)
- IT Plastics, uses  
(thermoplastics, film deposited onto; method of forming an amorphous hydrogenated **carbon film**)
- IT Plastics, uses  
(thermosetting, film deposited onto; method of forming an amorphous hydrogenated **carbon film**)
- IT 74-82-8, Methane, reactions 74-86-2, Acetylene, reactions  
75-46-7, Trifluoromethane 593-53-3, Fluoromethane  
(deposition precursor; method of forming an amorphous hydrogenated **carbon film**)
- IT 7727-37-9, Nitrogen, processes  
(**dopant**, deposition atm.; method of forming an amorphous hydrogenated **carbon film**)
- IT 7440-21-3, Silicon, uses  
(**dopant**, film deposited onto; method of forming an amorphous hydrogenated **carbon film**)
- IT 7439-89-6, Iron, uses 12033-89-5, Silicon nitride, uses  
12597-69-2, Steel, uses  
(film deposited onto; method of forming an amorphous hydrogenated

- carbon film)
- IT 7440-44-0P, Carbon, uses  
(hydrogenated film, sputtering electrode material;  
method of forming an amorphous hydrogenated carbon  
film)
- IT 1333-74-0, Hydrogen, uses 7440-37-1, Argon, uses 7440-42-8,  
Boron, uses 7782-41-4, Fluorine, uses 7782-44-7, Oxygen,  
uses  
(method of forming an amorphous hydrogenated carbon  
film)
- L88 ANSWER 2 OF 31 HCA COPYRIGHT 2003 ACS on STN
- 134:226279 Dynamic-pressure fluid bearings with parts having  
**diamond-like carbon coatings.**  
Ikeo, Izumi; Nakayama, Masatoshi (TDK Electronics Co., Ltd., Japan).  
Jpn. Kokai Tokkyo Koho JP 2001065571 A2 20010316, 9 pp.  
(Japanese). CODEN: JKXXAF. APPLICATION: JP 2000-186074 20000621.  
PRIORITY: JP 1999-179346 19990625.
- AB The bearings are equipped with parts having patterned concave and/or  
convex, where .gtoreq.1 of the parts has a **diamond-  
like C coating** formed on a patterned  
surface. The parts may be a shaft and/or a sleeve. The  
diamond-like C may be represented as CH<sub>x</sub>Si<sub>y</sub>O<sub>z</sub>N<sub>v</sub>F<sub>w</sub> (x = 0.05-0.7; y =  
0-3.0; z = 0-1.0; v = 0-1.0; w = 0-0.2). The bearings have high  
rotation accuracy, wear resistance, and durability.
- IT 7782-41-4, Fluorine, uses  
(**carbon coatings doped with;**  
dynamic-pressure fluid bearings with patterned parts having  
**diamond-like carbon coatings**  
)
- RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)
- F-- F
- IT 7440-44-0, Carbon, uses  
(dynamic-pressure fluid bearings with patterned parts having  
**diamond-like carbon coatings**  
)
- RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)
- C
- IT 7727-37-9, Nitrogen, uses  
(dynamic-pressure fluid bearings with patterned parts having  
**diamond-like carbon coatings**  
)
- RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N=N

IC ICM F16C033-24  
 ICS C01B031-02; C23C014-06; C23C016-27; F16C017-10; G11B019-20  
 CC 57-8 (Ceramics)  
 ST dynamic pressure fluid bearing **diamond like carbon coating**  
 IT Bearings  
 Shafts  
 (dynamic-pressure fluid bearings with patterned parts having **diamond-like carbon coatings**)  
 IT 1333-74-0, Hydrogen, uses 7440-21-3, Silicon, uses 7782-41-4, Fluorine, uses 7782-44-7, Oxygen, uses  
 (carbon coatings doped with;  
 dynamic-pressure fluid bearings with patterned parts having **diamond-like carbon coatings**)  
 IT 7440-44-0, Carbon, uses 12725-27-8, SUS303  
 (dynamic-pressure fluid bearings with patterned parts having **diamond-like carbon coatings**)  
 IT 7727-37-9, Nitrogen, uses  
 (dynamic-pressure fluid bearings with patterned parts having **diamond-like carbon coatings**)

L88 ANSWER 3 OF 31 HCA COPYRIGHT 2003 ACS on STN

133:67443 Method for deposition of diamond-like carbon and silicon-doped **diamond-like carbon coatings** from a Hall-current ion source. Mahoney, Leonard Joseph; Brown, David Ward; Petrulich, Rudolph Hugo (Diamonex, Incorporated, USA). U.S. US 6086962 A 20000711, 22 pp., Cont.-in-part of U.S. 5,973,447. (English). CODEN: USXXAM. APPLICATION: US 1999-243913 19990203. PRIORITY: US 1997-901036 19970725.

AB A unique Hall-Current ion source app. was used for direct ion beam deposition of **DLC coatings** with hardness values >10 GPa and at deposition rates >10 .ANG. per s. This ion source has a unique fluid-cooled anode with a shadowed gap through which ion sources feed gases are introduced while depositing gases are injected into the plasma beam. The shadowed gap provides a well maintained, elec. active area at the anode surface which stays relatively free of nonconductive deposits. The anode discharge region is insulatively sealed to prevent discharges from migrating into the interior of the ion source. A method is described in which a substrate is disposed within a vacuum chamber, coated with a **coating** of **DLC** or **Si-DLC** at a high deposition rate using a Hall-Current ion source operating on C-contg. or C-contg. and Si-contg. precursor gases, resp. The method is particularly

advantageous for producing thin, hard, wear resistant DLC and Si-DLC coatings for magnetic transducers and media used for magnetic data storage applications.

IT 7440-44-0P, Carbon, processes  
(method for deposition of diamond-like carbon and silicon-doped diamond-like carbon coatings from Hall-current ion source)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 7727-37-9, Nitrogen, uses 7727-37-9D, Nitrogen, compds., uses 7782-41-4D, Fluorine, compds., uses  
(precursor; method for deposition of diamond-like carbon and silicon-doped diamond-like carbon coatings from Hall-current ion source)  
RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM H05H001-24  
ICS C23C016-26  
NCL 427577000  
CC 76-11 (Electric Phenomena)  
Section cross-reference(s): 42, 77  
ST diamondlike carbon silicon coating ion source  
IT Coating materials  
(abrasion-resistant; method for deposition of diamond-like carbon and silicon-doped diamond-like carbon coatings from Hall-current ion source)  
IT Coating materials  
(diamond; method for deposition of diamond-like carbon and silicon-doped diamond-like carbon coatings from Hall-current ion source)  
IT Coating materials

Electronic device fabrication  
Glass substrates  
Ion beam sputtering  
Ion sources  
Magnetic disks  
Magnetic memory devices  
Sputtering devices  
    (method for deposition of diamond-like carbon and silicon-  
        **doped diamond-like carbon**  
        **coatings** from Hall-current ion source)  
IT Noble gases, uses  
    (method for deposition of diamond-like carbon and silicon-  
        **doped diamond-like carbon**  
        **coatings** from Hall-current ion source)  
IT Anodes  
    (method for deposition of diamond-like carbon and silicon-  
        **doped diamond-like carbon**  
        **coatings** from Hall-current ion source with)  
IT Vapor deposition apparatus  
    (plasma; method for deposition of diamond-like carbon and  
        silicon-**doped diamond-like**  
        **carbon coatings** from Hall-current ion source)  
IT Hydrocarbons, uses  
    Silanes  
        (precursor; method for deposition of diamond-like carbon and  
            silicon-**doped diamond-like**  
            **carbon coatings** from Hall-current ion source)  
IT Ceramics  
    (substrate; method for deposition of diamond-like carbon and  
        silicon-**doped diamond-like**  
        **carbon coatings** from Hall-current ion source)  
IT Metals, processes  
    Polymers, processes  
        (substrate; method for deposition of diamond-like carbon and  
            silicon-**doped diamond-like**  
            **carbon coatings** from Hall-current ion source)  
IT Magnetic apparatus  
    (transducers; method for deposition of diamond-like carbon and  
        silicon-**doped diamond-like**  
        **carbon coatings** from Hall-current ion source)  
IT 7440-21-3P, Silicon, uses  
    (method for deposition of diamond-like carbon and silicon-  
        **doped diamond-like carbon**  
        **coatings** from Hall-current ion source)  
IT 7439-90-9, Krypton, uses 7440-01-9, Neon, uses 7440-37-1, Argon,  
    uses 7440-63-3, Xenon, uses  
        (method for deposition of diamond-like carbon and silicon-  
            **doped diamond-like carbon**  
            **coatings** from Hall-current ion source)  
IT 7440-44-0P, Carbon, processes  
    (method for deposition of diamond-like carbon and silicon-  
        **doped diamond-like carbon**

**coatings** from Hall-current ion source)  
IT 74-82-8, Methane, uses 74-84-0, Ethane, uses 74-85-1, Ethene,  
uses 74-86-2, Acetylene, uses 75-76-3, Tetramethylsilane  
106-97-8, Butane, uses 106-99-0, 1,3-Butadiene, uses 110-54-3,  
Hexane, uses 110-82-7, Cyclohexane, uses 542-91-6, Diethylsilane  
992-94-9, Methylsilane 993-07-7, Trimethylsilane 1111-74-6,  
Dimethylsilane 1333-74-0, Hydrogen, uses 1590-87-0, Disilane  
7727-37-9, Nitrogen, uses 7727-37-9D, Nitrogen,  
compds., uses 7782-41-4D, Fluorine, compds., uses  
7803-62-5, Silane, uses  
(precursor; method for deposition of diamond-like carbon and  
silicon-doped diamond-like  
**carbon coatings** from Hall-current ion source)

L88 ANSWER 4 OF 31 HCA COPYRIGHT 2003 ACS on STN

130:118217 Preparation of anti-reflective coatings. Babich, Katelina  
E.; Callegari, Alessandro Cesare; Fountaine, Julian; Grill, Alfred;  
Jahnes, Christopher; Patel, Vishnubhai Vitthalbhai (International  
Business Machines Corp., USA). Jpn. Kokai Tokkyo Koho JP 11008248  
A2 19990112 Heisei, 13 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1998-149136 19980529. PRIORITY: US 1997-868772  
19970604.

AB BARC **coatings** are from DLC(diamond-like carbon)  
FDLC (fluorinated DLC), FHDLC (fluorinated hydrogenated DLC), NDLC  
(nitrogenated DLC), fluorinated and/or hydrogenated amorphous C, and  
have adjustable index of refraction for UV and DUV wavelength. The  
coatings are highly conformably attached to semiconductor device  
topog., and etched by O ad/or F ions. Reflectivity at the interface  
of resists and the BARC coatings can be 0 for UV and DUV.

IT 7440-44-0, Carbon, processes  
(prepn. of anti-reflective **coatings** from  
**diamond-like** carbon for semiconductor devices)

RN 7440-44-0 HCA

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 7727-37-9, Nitrogen, uses 7782-41-4, Fluorine,  
uses  
(prepn. of anti-reflective **coatings** from  
**diamond-like** carbon for semiconductor devices)

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

- IC ICM H01L021-3205  
ICS H01L021-027
- CC 76-3 (Electric Phenomena)  
Section cross-reference(s): 75
- ST BARC antireflection **coating** diamond **carbon**;  
**DLC** antireflection **coating** BARC; hydrogenated  
fluorinated **DLC** antireflection **coating** BARC;  
nitrogenated **DLC** antireflection **coating** BARC;  
amorphous **carbon** antireflection **coating** BARC; UV  
DUV antireflection **coating** **DLC** **carbon**
- IT Vapor deposition process  
(chem.; prepn. of anti-reflective **coatings** from  
**diamond-like** carbon for semiconductor devices)
- IT Etching  
(plasma; prepn. of anti-reflective **coatings** from  
**diamond-like** carbon for semiconductor devices)
- IT Semiconductor devices  
UV radiation  
(prepn. of anti-reflective **coatings** from  
**diamond-like** carbon for)
- IT **Doping**  
Films  
Optical reflection  
(prepn. of anti-reflective **coatings** from  
**diamond-like** carbon for semiconductor devices)
- IT 7782-44-7, Oxygen, reactions  
(plasma etching in prepn. of anti-reflective **coatings**  
from **diamond-like** carbon for semiconductor  
devices)
- IT 7440-44-0, Carbon, processes 7782-40-3, Diamond, processes  
(prepn. of anti-reflective **coatings** from  
**diamond-like** carbon for semiconductor devices)
- IT 1333-74-0, Hydrogen, uses 7727-37-9, Nitrogen, uses  
7782-41-4, Fluorine, uses  
(prepn. of anti-reflective **coatings** from  
**diamond-like** carbon for semiconductor devices)
- IT 392-56-3, Hexafluorobenzene  
(prepn. of anti-reflective **coatings** from  
**diamond-like** carbon for semiconductor devices)

L88 ANSWER 5 OF 31 HCA COPYRIGHT 2003 ACS on STN

129:319237 **Carbonaceous** deposit-resistant **coating**  
for engine components. Potter, Timothy J.; Zhang, Xia; Vassell,  
William; Rigley, Michael R.; Hetrick, Robert E. (Ford Global  
Technologies, Inc., USA). Eur. Pat. Appl. EP 874066 A1 19981028, 10  
pp. DESIGNATED STATES: R: AT, BE, CH, DE, DK, ES, FR, GB, GR, IT,  
LI, LU, NL, SE, MC, PT, IE, SI, LT, LV, FI, RO. (English). CODEN:  
EPXXDW. APPLICATION: EP 1998-302701 19980407. PRIORITY: US

1997-837679 19970421.

AB An engine component such as an intake or exhaust valve, or any other component near or within the combustion chamber, is coated with a 200.ANG.-10-.mu.m amorphous hydrogenated **C film coating** to prevent the formation of carbonaceous deposits. The coating is applied by a CVD technique from a hydrocarbon source.

IT **7440-44-0P**, Carbon, preparation  
(engine components **coated** with **carbonaceous** deposit-resistant **coating** of amorphous hydrogenated)

RN 7440-44-0 HCA

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT **7727-37-9**, Nitrogen, uses **7782-41-4**, Fluorine, uses  
(engine components **coated** with **carbonaceous** deposit-resistant **coating** of amorphous hydrogenated carbon **doped** with)

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM C23C016-26  
ICS F02F003-14; F02B077-02

CC 55-6 (Ferrous Metals and Alloys)  
Section cross-reference(s): 45

ST combustion engine component amorphous **carbon coating**; amorphous hydrogenated **carbon coating** engine valve; CVD amorphous hydrogenated **carbon coating** hydrocarbon

IT Vapor deposition process  
(chem.; of **carbonaceous** deposit-resistant **coating** for engine components)

IT Valves  
(combustion-engine; **carbonaceous** deposit-resistant **coating** for)

IT Hydrocarbons, processes  
(engine components **coated** with **carbonaceous** deposit-resistant **coating** of amorphous hydrogenated carbon from)

IT **7440-44-0P**, Carbon, preparation  
(engine components **coated** with **carbonaceous**



- deposit-resistant **coating** of amorphous hydrogenated)
- IT 7440-03-1, Niobium, uses 7440-21-3, Silicon, uses 7440-25-7, Tantalum, uses 7440-32-6, Titanium, uses 7440-33-7, Tungsten, uses 7440-42-8, Boron, uses 7727-37-9, Nitrogen, uses 7782-41-4, Fluorine, uses 7782-44-7, Oxygen, uses (engine components **coated** with **carbonaceous** deposit-resistant **coating** of amorphous hydrogenated carbon **doped** with)
- L88 ANSWER 6 OF 31 HCA COPYRIGHT 2003 ACS on STN
- 128:285412 Recent progress on the tribology of **doped** diamond-like and **carbon** alloy **coatings**: a review. Donnet, C. (UMR 5513, Laboratoire de Tribologie et Dynamique des Systemes, Ecole Centrale de Lyon, 69 131, Ecully, Fr.). Surface and Coatings Technology, 100-101(1-3), 180-186 (English) 1998. CODEN: SCTEEJ. ISSN: 0257-8972. Publisher: Elsevier Science S.A..
- AB A review with 49 refs. **Diamond-like carbon (DLC) coatings** have been widely recognized as being a wear-resistant solid lubricant with a low friction coeff. Its tribol. behavior strongly depends both on the tribo-testing conditions and the nature of the coating, which in turn depends on the technique used for film deposition. Recently, there have been several attempts to improve the tribol. behavior of **DLC coatings** by the addn. of elements, such as silicon, nitrogen, fluorine and various metals. The paper will present an updated review of the tribol. properties of **doped** DLC, in comparison with the conventional hydrogenated and non-hydrogenated **carbonaceous** films.
- IT 7440-44-0, Carbon, uses (diamond-like; recent progress on tribol. of **doped** **diamond-like coatings** and **carbon** alloy **coatings**)
- RN 7440-44-0 HCA
- CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)
- C
- IT 7727-37-9, Nitrogen, uses 7782-41-4, Fluorine, uses (recent progress on tribol. of **doped** **diamond-like coatings** and **carbon** alloy **coatings**)
- RN 7727-37-9 HCA
- CN Nitrogen (8CI, 9CI) (CA INDEX NAME)
- N≡N
- RN 7782-41-4 HCA
- CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F- F

- CC 57-0 (Ceramics)  
ST review **diamond like coating**  
**doped tribol; carbon alloy coating**  
**doped tribol review; lubricant doped**  
**diamond like coating review**  
IT Coating materials  
Coating materials  
(abrasion-resistant, antifriction; recent progress on tribol. of  
**doped diamond-like coatings**  
and **carbon alloy coatings**)  
IT Coating materials  
Friction  
Wear  
(recent progress on tribol. of **doped diamond-**  
**like coatings and carbon alloy**  
**coatings**)  
IT Transition metals, uses  
(recent progress on tribol. of **doped diamond-**  
**like coatings and carbon alloy**  
**coatings**)  
IT 7440-44-0, Carbon, uses  
(diamond-like; recent progress on tribol. of **doped**  
**diamond-like coatings and**  
**carbon alloy coatings**)  
IT 7440-21-3, Silicon, uses 7727-37-9, Nitrogen, uses  
7782-41-4, Fluorine, uses  
(recent progress on tribol. of **doped diamond-**  
**like coatings and carbon alloy**  
**coatings**)  
L88 ANSWER 7 OF 31 HCA COPYRIGHT 2003 ACS on STN  
110:144948 Electrophotographic photosensitive element with surface  
protective layer. Osawa, Izumi; Doi, Isao; Masaki, Kenji (Minolta  
Camera Co., Ltd., Japan). Ger. Offen. DE 3820816 A1 19881229, 15  
pp. (German). CODEN: GWXXBX. APPLICATION: DE 1988-3820816  
19880620. PRIORITY: JP 1987-150895 19870617; JP 1987-150896  
19870617; JP 1987-150897 19870617; JP 1987-150898 19870617; JP  
1987-150899 19870617.  
AB Electrophotog. photosensitive elements, having outstanding  
electrophotog. characteristics including a long service life because  
of a high surface hardness, consist of an elec. conductive support,  
a photoconductive layer consisting of As-Se, or a Se layer and a  
Se-Te layer, and a surface protective layer from hydrogenated  
amorphous C contg. a halogen and .gtoreq.1 element selected from a  
chalcogen, O, N, and Group IIIA and IVA elements. Thus, an  
electrophotog. photoreceptor having a surface protective layer  
prepd. by glow discharge decompn. of H2, propylene,  
perfluoropropylene, and H2Se was capable of producing >250,000

copies with no loss in image quality.

IT 7727-37-9, Nitrogen, uses and miscellaneous  
7782-41-4, Fluorine, uses and miscellaneous  
(electrophotog. plate with surface protective layer from  
hydrogenated amorphous carbon contg.)  
RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IT 7440-44-0, Carbon, properties  
(electrophotog. plates with surface protective layer from  
**doped** hydrogenated amorphous)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IC ICM G03G005-14  
ICS G03G005-082; H01L031-00  
ICA C23C016-50; C23C014-38  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
IT Electrophotographic plates  
(selenium-based, with surface protective layer from **doped**  
hydrogenated amorphous carbon)  
IT 75-24-1, Trimethylaluminum 75-73-0, Carbon tetrafluoride  
106-99-0, Butadiene, uses and miscellaneous 115-07-1, Propylene,  
uses and miscellaneous 116-15-4, Perfluoropropylene 124-38-9,  
Carbon dioxide, uses and miscellaneous 7664-41-7, Ammonia, uses  
and miscellaneous 7782-65-2, Germane 7783-07-5, Hydrogen  
selenide 7803-51-2, Phosphine 7803-62-5, Silane, uses and  
miscellaneous 19287-45-7, Diborane  
(decompn. of, by glow discharge in **doped** hydrogenated  
amorphous carbon electrophotog. surface protective layer  
fabrication)  
IT 7440-38-2, Arsenic, properties 13494-80-9, Tellurium, properties  
(electrophotog. plate with photoconductive layer contg. selenium  
and, **doped** hydrogenated amorphous **carbon**  
surface protective **layer** for)  
IT 1333-74-0, Hydrogen, properties  
(electrophotog. plate with surface protective layer contg.  
**doped** amorphous carbon and)  
IT 7429-90-5, Aluminum, uses and miscellaneous 7440-21-3, Silicon,

uses and miscellaneous 7440-42-8, Boron, uses and miscellaneous  
7440-56-4, Germanium, uses and miscellaneous 7704-34-9, Sulfur,  
uses and miscellaneous 7723-14-0, Phosphorus, uses and  
miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous  
7782-41-4, Fluorine, uses and miscellaneous 7782-44-7,  
Oxygen, uses and miscellaneous 7782-49-2, Selenium, uses and  
miscellaneous

(electrophotog. plate with surface protective layer from  
hydrogenated amorphous carbon contg.)

IT 7440-44-0, Carbon, properties  
(electrophotog. plates with surface protective layer from  
**doped** hydrogenated amorphous)

L88 ANSWER 8 OF 31 HCA COPYRIGHT 2003 ACS on STN

109:103168 A method for sputter deposition of a semiconductor  
**carbon** thin **film**. Watanabe, Misuzu (Meidensha  
Electric Mfg. Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63062221  
A2 19880318 Showa, 6 pp. (Japanese). CODEN: JKXXAF. APPLICATION:  
JP 1986-206447 19860902.

AB In reactive sputter deposition of a semiconductor **C** thin  
**film** in an atm. contg. low-pressure H using a graphite  
target, the target has a buried **dopant** B or B carbide  
0.1-10 area %. Addnl., the atm. may contg. Ar, He, F, N, or O.

IT 7727-37-9, Nitrogen, uses and miscellaneous  
7782-41-4, uses and miscellaneous  
(sputter deposition of **carbon** semiconductor  
**films** in atm. contg.)

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM H01L021-203

ICS C23C014-34

ICA C30B029-04

CC 76-3 (Electric Phenomena)

Section cross-reference(s): 75

ST **carbon film** semiconductor sputter deposition;  
hydrogen atm deposition carbon semiconductor

IT Semiconductor materials

(**carbon films**, **dopant**-contg.

graphite sputtering targets for deposition of)

IT Sputtering

(deposition of **carbon** semiconductor **films** by,  
**dopant**-contg. graphite targets for)

- IT Controlled atmospheres  
(for sputter deposition of **carbon** semiconductor  
films)
- IT 7440-42-8, Boron, uses and miscellaneous 12069-32-8, Boron carbide  
(graphite sputtering targets contg., for deposition of  
**carbon** semiconductor films)
- IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-37-1, Argon, uses  
and miscellaneous 7440-59-7, Helium, uses and miscellaneous  
7727-37-9, Nitrogen, uses and miscellaneous  
7782-41-4, uses and miscellaneous 7782-44-7, Oxygen, uses  
and miscellaneous  
(sputter deposition of **carbon** semiconductor  
films in atm. contg.)
- IT 7782-42-5, Graphite, uses and miscellaneous  
(sputtering targets from **doped**, for deposition of  
**carbon** semiconductor films)

L88 ANSWER 9 OF 31 HCA COPYRIGHT 2003 ACS on STN

109:30106 Electrophotographic plates. Akiyama, Koji; Tanaka, Eiichiro;  
Takimoto, Akio; Onomichi, Kiyoko; Watanabe, Masanori (Matsushita  
Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP  
63013051 A2 19880120 Showa, 7 pp. (Japanese). CODEN: JKXXAF.  
APPLICATION: JP 1986-157683 19860703.

AB The title material is characterized by interleaving of a  
light-absorbing layer between the substrate and the photoconductor  
layer to absorb the light which passes through the photoconductor  
layer, in construction of the photoconductor layer from hydrogenated  
or halogenated Si and/or Ge and a carrier transport layer from  
hydrogenated or halogenated amorphous C on the substrate. The  
light-absorbing layer may contain a Group IVA element, H,  
halogen(s), O, and/or N. Group IIIA or VA element(s) may be  
contained in the above layers. The carrier transport layer may  
contain O, S, and/or N. The photoconductor **layer** may  
contain C, O, and/or N. A hydrogenated amorphous Ge  
light-absorbing layer, B-, O-, and N-**doped**, a hydrogenated  
amorphous C carrier transport **layer**, B- and O-  
**doped**, and a hydrogenated-fluorinated Si photoconductor  
layer, 0.5-5, 15, and 0.5-2-.mu.m thick, resp., were formed by  
plasma chem. vapor deposition. The residual potential was < 20V.

IT 7440-44-0, uses and miscellaneous  
(photoconductor from **doped** amorphous, for  
electrophotog.)

RN 7440-44-0 HCA

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 7727-37-9, uses and miscellaneous 7782-41-4, uses  
and miscellaneous  
(photoconductors **doped** with, for electrophotog.)

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

$\text{N}\equiv\text{N}$

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F—F

IC ICM G03G005-08

ICS G03G005-04; G03G005-14

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

Section cross-reference(s): 75, 76

IT Halogens

(photoconductors **doped** with, for electrophotog.)

IT 7440-56-4, Germanium, uses and miscellaneous

(light-absorbing layers from, **doped**, amorphous, hydrogenated, for electrophotog.)

IT 7440-21-3, Silicon, uses and miscellaneous

(light-absorbing layers from, **doped**, amorphous, hydrogenated, for electrophotog.)

IT **7440-44-0**, uses and miscellaneous

(photoconductor from **doped** amorphous, for electrophotog.)

IT 7440-42-8, uses and miscellaneous **7727-37-9**, uses and

miscellaneous **7782-41-4**, uses and miscellaneous

**7782-44-7**, uses and miscellaneous

(photoconductors **doped** with, for electrophotog.)

L88 ANSWER 10 OF 31 HCA COPYRIGHT 2003 ACS on STN

109:30105 Electrophotographic plates. Akiyama, Koji; Tanaka, Eiichiro; Takimoto, Akio; Onomichi, Kiyoko; Watanabe, Masanori (Matsushita Electric Industrial Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 63013050 A2 19880120 Showa, 11 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-157681 19860703.

AB The title material is characterized by lamination of a photoconductor layer from hydrogenated or halogenated Si and/or Ge (e.g., contg. C, N, and/or O) and a carrier transport layer from hydrogenated or halogenated amorphous C (e.g., contg. O, S, and/or N) with a variable concn. of H or halogen(s) in the thickness direction, on a substrate. Group IIIA and VA element(s) may be contained in the layers. A hydrogenated-fluorinated amorphous **C layer** 15-.mu.m thick and contg. O was formed on a Cr-sputter-coated Al substrate by plasma chem. vapor deposition with varied flow rates for C<sub>2</sub>H<sub>4</sub> and CF<sub>4</sub>, and then a hydrogenated-fluorinated amorphous P-**doped** Si having a max. total concn. of H and F on the side of the carrier transport layer was formed. An electrophotog. plate prepd. had 2000-3500 V in surface potential and < 30 V in residual potential.

IT 7440-44-0, Carbon, uses and miscellaneous  
(electrophotog. carrier transport layers from, amorphous,  
hydrogenated, halogenated)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 7727-37-9, uses and miscellaneous 7782-41-4, uses  
and miscellaneous  
(photoconductors **doped** with, for electrophotog.)  
RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM G03G005-08  
ICS G03G005-04  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 75, 76  
ST electrophotog amorphous **carbon** carrier transport  
**layer**  
IT Halogens  
(photoconductors **doped** with, for electrophotog.)  
IT 7440-44-0, Carbon, uses and miscellaneous  
(electrophotog. carrier transport layers from, amorphous,  
hydrogenated, halogenated)  
IT 1333-74-0, uses and miscellaneous 7704-34-9, uses and  
miscellaneous 7723-14-0, uses and miscellaneous 7727-37-9  
, uses and miscellaneous 7782-41-4, uses and miscellaneous  
7782-44-7, uses and miscellaneous  
(photoconductors **doped** with, for electrophotog.)  
L88 ANSWER 11 OF 31 HCA COPYRIGHT 2003 ACS on STN  
107:187424 Electrophotographic photoreceptor. Shirai, Shigeru; Saito,  
Keishi; Arai, Takashi; Kato, Minoru; Fujioka, Yasushi (Canon K. K.,  
Japan). Jpn. Kokai Tokkyo Koho JP 62187357 A2 19870815 Showa, 43  
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-29792  
19860213.  
AB A moisture-proof electrophotog. photoreceptor providing an image  
with clearly defined halftones is claimed which comprises a support  
and a photoreceptor layer formed on the support, wherein the  
photoreceptor layer consists of a Si-Ge long-wavelength-sensitive

layer, optionally, contg. a cond.-controlling additive; a polycryst. Si charge-injection-stopping layer contg. a cond.-controlling additive; an amorphous Si photoconductor layer contg. H or halogen, optionally, .gtoreq.1 of C, O, N; and a polycryst. surface layer contg. Si, C, H, optionally, halogen, and wherein the surface layer has a variable **dopant** concn. distribution in the thickness direction so as to match the optical bandgap with the photoconductor layer at the interface, and the max. H concn. in the surface layer is 41-70 at.%.  
IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine,  
uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)

RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM G03G005-08  
ICS G03G005-14; H01L031-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-42-8, Boron, uses and miscellaneous 7440-44-0, Carbon, uses and miscellaneous 7440-56-4, Germanium, uses and miscellaneous 7723-14-0, Phosphorus, uses and miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine, uses and miscellaneous 7782-44-7, Oxygen, uses and miscellaneous (electrophotog. photoreceptor from amorphous silicon contg.)

L88 ANSWER 12 OF 31 HCA COPYRIGHT 2003 ACS on STN  
107:187423 Electrophotographic photoreceptor. Shirai, Shigeru; Saito, Keishi; Arai, Takashi; Kato, Minoru; Fujioka, Yasushi (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 62186269 A2 19870814 Showa, 42 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-28149 19860212.

AB A moisture-proof electrophotog. photoreceptor providing an image with clearly defined halftones is claimed which comprises a support and a photoreceptor layer formed on the support, wherein the



photoreceptor layer consists of a N-, O-, C-contg. amorphous Si sealing layer; a Si-Ge long-wavelength-sensitive layer, optionally, contg. a cond.-controlling additive; a polycryst. Si charge-injection-stopping layer contg. a cond.-controlling additive; an amorphous Si photoconductor layer contg. H or halogen, optionally, .gtoreq.1 of C, O, N; and a polycryst. surface **layer** contg. Si, C, H, optionally, halogen, and wherein the surface layer has a variable **dopant** concn. distribution in the thickness direction so as to match the optical bandgap with the photoconductor layer at the interface, and the max. H concn. in the surface layer is 41-70 at.%.  
IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine,  
uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

 $\text{N} \equiv \text{N}$ 

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F—F

IC ICM G03G005-08  
ICS G03G005-14; H01L031-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-42-8, Boron, uses and miscellaneous 7440-44-0, Carbon, uses and miscellaneous 7440-56-4, Germanium, uses and miscellaneous 7723-14-0, Phosphorus, uses and miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine, uses and miscellaneous 7782-44-7, Oxygen, uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)

L88 ANSWER 13 OF 31 HCA COPYRIGHT 2003 ACS on STN  
107:187422 Electrophotographic photoreceptor. Shirai, Shigeru; Saito, Keishi; Arai, Takashi; Kato, Minoru; Fujioka, Yasushi (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 62183468 A2 19870811 Showa, 40 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-26464 19860207.

AB A moisture-proof electrophotog. photoreceptor providing an image

with clearly defined halftones is claimed which comprises a support and a photoreceptor layer formed on the support, wherein the photoreceptor layer consists of a Si-Ge long-wavelength-sensitive layer, a Si-based charge-injection-stopping layer contg. a cond.-controlling additive; an amorphous Si photoconductor layer contg. H or halogen, optionally, .gtoreq.1 of C, O, N; and a polycryst. surface **layer** contg. Si, C, H, optionally, halogen, and wherein the surface layer has a variable **dopant** concn. distribution in the thickness direction so as to match the optical bandgap with the photoconductor layer at the interface, and the max. H concn. in the surface layer is 41-70 at.%.  
IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine,  
uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)

RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

$\text{N}\equiv\text{N}$

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM G03G005-08  
ICS H01L031-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-44-0,  
Carbon, uses and miscellaneous 7440-56-4, Germanium, uses and  
miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous  
7782-41-4, Fluorine, uses and miscellaneous 7782-44-7,  
Oxygen, uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)

L88 ANSWER 14 OF 31 HCA COPYRIGHT 2003 ACS on STN  
107:165505 Electrophotographic photoreceptor. Shirai, Shigeru; Saito, Keishi; Arai, Takashi; Kato, Minoru; Fujioka, Yasushi (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 62187858 A2 19870817 Showa, 31 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-31396 19860214.

AB A moisture-proof electrophotog. photoreceptor providing an image with clearly defined halftones is claimed which comprises a support

and a photoreceptor layer formed on the support, wherein the photoreceptor layer consists of an amorphous Si photoconductor layer contg. H or halogen, optionally, .gtoreq.1 of C, O, N, and a polycryst. surface **layer** contg. Si, C, H, optionally, halogen, and wherein the receptor further comprises, optionally, a amorphous Si-based charge-injection-stopping layer between the support and the photoconductor layer, and a Si-Ge long-wavelength-sensitive layer between the support and the charge-injection-stopping layer.

IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine,  
uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F—F

IC ICM G03G005-08  
ICS G03G005-14; H01L031-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-44-0,  
Carbon, uses and miscellaneous 7440-56-4, Germanium, uses and  
miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous  
7782-41-4, Fluorine, uses and miscellaneous 7782-44-7,  
Oxygen, uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)  
IT 7440-21-3, Silicon, uses and miscellaneous  
(electrophotog. photoreceptor from **doped** amorphous)

L88 ANSWER 15 OF 31 HCA COPYRIGHT 2003 ACS on STN  
107:165504 Electrophotographic photoreceptor. Shirai, Shigeru; Saito,  
Keishi; Arai, Takashi; Kato, Minoru; Fujioka, Yasushi (Canon K. K.,  
Japan). Jpn. Kokai Tokkyo Koho JP 62183469 A2 19870811 Showa, 33  
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-26465  
19860207.

AB A moisture-proof electrophotog. photoreceptor providing an image  
with clearly defined halftones is claimed which comprises a support

and a photoreceptor layer formed on the support, wherein the photoreceptor layer consists of a polycryst. Si charge-injection-stopping layer contg. a cond.-controlling additive; an amorphous Si photoconductor layer contg. H or halogen, optionally, .gtoreq.1 of C, O, N; and a polycryst. surface **layer** contg. Si, C, H, optionally, halogen, and wherein the surface layer has a variable **dopant** concn. distribution in the thickness direction so as to match the optical bandgap with the photoconductor layer at the interface, and the max. H concn. in the surface layer is 41-70 at.%.

IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine,  
uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N=N

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM G03G005-08  
ICS H01L031-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-44-0,  
Carbon, uses and miscellaneous 7440-56-4, Germanium, uses and  
miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous  
7782-41-4, Fluorine, uses and miscellaneous 7782-44-7,  
Oxygen, uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)

L88 ANSWER 16 OF 31 HCA COPYRIGHT 2003 ACS on STN  
107:165503 Electrophotographic photoreceptor. Shirai, Shigeru; Saito,  
Keishi; Arai, Takashi; Kato, Minoru; Fujioka, Yasushi (Canon K. K.,  
Japan). Jpn. Kokai Tokkyo Koho JP 62182751 A2 19870811 Showa, 31  
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-24652  
19860206.

AB A moisture-proof electrophotog. photoreceptor providing an image  
with clearly defined halftones is claimed which comprises a support  
and a photoreceptor layer formed on the support, wherein the

photoreceptor layer consists of a Si-based charge-injection-stopping layer contg. a cond.-controlling additive; an amorphous Si photoconductor layer contg. H or halogen, optionally, .gtoreq.1 of C, O, N; and a polycryst. surface **layer** contg. Si, C, H, optionally, halogen, and wherein the surface layer has a variable **dopant** concn. distribution in the thickness direction so as to match the optical bandgap with the photoconductor layer at the interface, and the max. H concn. in the surface layer is 41-70 at.%.

IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine,  
uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F—F

IC ICM G03G005-08  
ICS H01L031-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-44-0,  
Carbon, uses and miscellaneous 7440-56-4, Germanium, uses and  
miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous  
7782-41-4, Fluorine, uses and miscellaneous 7782-44-7,  
Oxygen, uses and miscellaneous  
(electrophotog. photoreceptor from amorphous silicon contg.)  
IT 7440-21-3, Silicon, uses and miscellaneous  
(electrophotog. photoreceptor from **doped** amorphous)

L88 ANSWER 17 OF 31 HCA COPYRIGHT 2003 ACS on STN  
107:165502 Electrophotographic photoreceptor. Shirai, Shigeru; Saito,  
Keishi; Arai, Takashi; Kato, Minoru; Fujioka, Yasushi (Canon K. K.,  
Japan). Jpn. Kokai Tokkyo Koho JP 62182750 A2 19870811 Showa, 26  
pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1986-24605  
19860205.  
AB A moisture-proof electrophotog. receptor providing an image with  
clearly defined halftones is claimed which comprises a support and a

photoreceptor layer formed on the support, wherein the photoreceptor layer consists of an amorphous Si photoconductor layer contg. H or halogen, optionally, .gtoreq.1 of C, O, N, and a polycryst. surface layer contg. Si, C, H, optionally, halogen, and wherein the surface layer has a variable dopant concn. distribution in the thickness direction so as to match the optical bandgap with the photoconductor layer at the interface, and the max. H concn. in the surface layer is 41-70 at.%.  
 IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
 , Nitrogen, uses and miscellaneous 7782-41-4, Fluorine,  
 uses and miscellaneous  
 (electrophotog. photoreceptor from amorphous silicon contg.)  
 RN 7440-44-0 HCA  
 CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA  
 CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
 CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM G03G005-08  
 ICS H01L031-08  
 CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
 IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-44-0,  
 Carbon, uses and miscellaneous 7440-56-4, Germanium, uses and  
 miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous  
 7782-41-4, Fluorine, uses and miscellaneous 7782-44-7,  
 Oxygen, uses and miscellaneous  
 (electrophotog. photoreceptor from amorphous silicon contg.)  
 IT 7440-21-3, Silicon, uses and miscellaneous  
 (electrophotog. photoreceptor from doped amorphous)

L88 ANSWER 18 OF 31 HCA COPYRIGHT 2003 ACS on STN

107:124723 Photoreceptors with interference-fringe elimination. Honda, Mitsuru; Murai, Keiichi; Ogawa, Kiyosuki; Koike, Atsushi (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 62102247 A2 19870512 Showa, 40 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-241573 19851030.

AB For a photoreceptor consisting of a 1st amorphous layer of Si and Ge and/or Sn, and a 2nd layer of amorphous Si, both contg. O, C, and/or N, the substrate (e.g. metal) surface has a no. of spherical minute

depressions in which a no. of micro-depressions are formed. The 2nd layer may uniformly contain O, N, and/or C. The 1st layer may consist of a multilayer (e.g., contg. a charge inhibition layer and/or a barrier layer) and/or have a cond.-controlling substance. The surface unevenness of the substrate may satisfy  $0.035 \text{ } \mu\text{m}$  to req.  $0.5 \text{ } \mu\text{m}$ ,  $D/R \text{ } \mu\text{m}$  to req.  $0.5 \text{ mm}$ , and  $0.5 \text{ } \mu\text{m}$  to req.  $r \text{ } \mu\text{m}$  to req.  $20 \text{ } \mu\text{m}$ , where D, R, and r are the width and curvature of the spherical depressions and the height of the micro-unevenness, resp., and may be formed by free dropping of rigid spheres. Thus, a 1st amorphous hydrogenated-fluorinated Si-Ge layer (a **layer** contg. C and B  $3 \text{ } \mu\text{m}$  thick and a **layer** contg. C  $22 \text{ } \mu\text{m}$  thick) and a 2nd amorphous fluorinated-hydrogenated Si **layer** contg. C ( $0.5 \text{ } \mu\text{m}$  thick) were formed on an Al alloy cylinder having an uneven surface with D  $450 \text{ } \mu\text{m}$ , D/R 0.06, and  $r_{\text{max}} 5 \text{ } \mu\text{m}$  at  $250^\circ$  by plasma chem. vapor deposition. Interference fringes were eliminated in photoimaging.

IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
 , Nitrogen, uses and miscellaneous 7782-41-4, Fluorine,  
 uses and miscellaneous  
 (silicon and silicon-germanium-tin amorphous films contg., for  
 photoimaging)  
 RN 7440-44-0 HCA  
 CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA  
 CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

$\text{N} \equiv \text{N}$

RN 7782-41-4 HCA  
 CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM G03G005-08  
 ICA G03G005-10  
 CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 75, 76  
 ST photoimaging amorphous photoreceptor layer silicon; silicon  
 germanium photoreceptor layer; tin silicon photoreceptor layer;  
 germanium tin silicon photoreceptor layer; oxygen **doped**  
 photoreceptor layer; nitrogen **doped** photoreceptor; carbon  
**doped** photoreceptor; interference fringe eliminating  
 substrate photoimaging; metal substrate photoimaging photoreceptor;  
 aluminum alloy substrate photoimaging; hydrogenated fluorinated

- amorphous layer photoimaging
- IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-42-8, Boron, uses and miscellaneous 7440-44-0, Carbon, uses and miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine, uses and miscellaneous 7782-44-7, Oxygen, uses and miscellaneous (silicon and silicon-germanium-tin amorphous films contg., for photoimaging)
- L88 ANSWER 19 OF 31 HCA COPYRIGHT 2003 ACS on STN
- 107:106472 Photoreceptors with interference-fringe elimination. Honda, Mitsuru; Murai, Keiichi; Ogawa, Kiyosuki; Koike, Atsushi (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 62102248 A2 19870512 Showa, 32 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-241574 19851030.
- AB A photoreceptor layer consisting of a 1st layer of amorphous Si and a 2nd antireflective layer is formed on a substrate (e.g. metal) having an uneven surface with a no. of spherical minute depressions in which a no. of microdepressions are formed. The 1st layer may contain C, N, and/or O, and/or a cond.-controlling substance, and may consist of a multilayer (e.g., contg. a charge inhibition layer or a barrier layer). The 2nd layer may consist of inorg. fluorides, oxides, and/or sulfides. The surface evenness may satisfy  $0.035 < D/R < 0.5$ ,  $D < 0.5$  mm, and  $0.5 \text{ } \mu\text{m} < r < 20 \text{ } \mu\text{m}$ , where D, R, and r are the width and curvature of the spherical depressions and the height of the micro-unevenness, resp. Thus, a hydrogenated amorphous Si film 25  $\mu\text{m}$  thick and a ZrO<sub>2</sub> (n = 2) film 0.293  $\mu\text{m}$  thick were formed on an Al-alloy cylinder having D 450  $\mu\text{m}$ , D/R 0.06, and r<sub>max</sub> 5  $\mu\text{m}$ . No interference fringes were obsd. in photoimaging.
- IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine, uses and miscellaneous (silicon amorphous layers contg., for interference fringe-free photoimaging)
- RN 7440-44-0 HCA
- CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)
- C
- RN 7727-37-9 HCA
- CN Nitrogen (8CI, 9CI) (CA INDEX NAME)
- N≡N
- RN 7782-41-4 HCA
- CN Fluorine (8CI, 9CI) (CA INDEX NAME)



- IC ICM G03G005-08  
ICA G03G005-10  
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 75, 76  
ST photoimaging photoreceptor layer; interference fringe preventing substrate photoimaging; amorphous silicon layer photoreceptor; antireflection layer photoreceptor; fluoride antireflection layer photoreceptor; oxide antireflection layer photoreceptor; sulfide antireflection layer photoreceptor; zirconia antireflection layer photoreceptor; hydrogenated amorphous silicon layer photoreceptor; electrophotog photoreceptor layer; carbon **doped** amorphous silicon photoreceptor; oxygen **doped** amorphous silicon photoreceptor; nitrogen **doped** amorphous silicon photoreceptor  
IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-42-8, Boron, uses and miscellaneous 7440-44-0, Carbon, uses and miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine, uses and miscellaneous 7782-44-7, Oxygen, uses and miscellaneous  
(silicon amorphous layers contg., for interference fringe-free photoimaging)  
L88 ANSWER 20 OF 31 HCA COPYRIGHT 2003 ACS on STN  
107:106467 Photoreceptors with interference fringe elimination. Honda, Mitsuru; Murai, Keiichi; Ogawa, Kiyosuke; Koike, Atsushi (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 62100761 A2 19870511 Showa, 39 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-241890 19851029.  
AB A photoreceptor layer consisting of a 1st amorphous layer from Si, and Ge and/or Sn and a 2nd layer from amorphous Si contg. C, N, and/or O is formed on a substrate having surface unevenness with spherical minute depressions in which a no. of micro-depressions are formed. The 1st layer may contain cond. controlling substance(s) and be a multilayer (e.g., contg. charge inhibition or barrier layers). The depressions on the substrate may be given by  $0.035 \leq D/R < 0.5$ ,  $D < 0.5 \text{ mm}$ , and  $0.5 \mu\text{m} \leq \gamma < 20 \mu\text{m}$ , where D, R, and  $\gamma$  are width and curvature of the depressions and height of micro-unevenness in the spherical depressions, resp., and formed by free dropping of rigid spheres. A fluorinated-hydrogenated Si-Ge and C-contg. Si **layer** were formed on an Al alloy cylinder having surface unevenness  $450 \mu\text{m}$  in D, 0.06 in D/R, and  $5 \mu\text{m}$  in  $\gamma_{\text{max}}$ . No interference fringes were obsd. in photoimaging.  
IT 7782-41-4, Fluorine, uses and miscellaneous  
(amorphous photoreceptor layers contg. silicon and, for photoimaging)  
RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
, Nitrogen, uses and miscellaneous  
(silicon amorphous photoreceptor layers contg., for photoimaging)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

IC ICM G03G005-08  
ICA G03G005-10  
CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 75, 76  
ST silicon germanium amorphous photoreceptor layer; tin silicon  
amorphous photoreceptor layer; germanium silicon tin amorphous  
photoreceptor layer; amorphous silicon amorphous photoreceptor  
layer; interference fringe free photoimaging photoreceptor; metal  
substrate interference fringe preventive; aluminum alloy substrate  
interference fringe preventive; hydrogenated amorphous photoreceptor  
layer; fluorinated amorphous photoreceptor layer; chlorinated  
amorphous photoreceptor layer; carbon **doped** amorphous  
photoreceptor layer; nitrogen **doped** amorphous  
photoreceptor layer; oxygen **doped** amorphous photoreceptor  
layer; boron **doped** amorphous photoreceptor layer;  
phosphorus **doped** amorphous photoreceptor layer  
IT 1333-74-0, Hydrogen, uses and miscellaneous 7782-41-4,  
Fluorine, uses and miscellaneous  
(amorphous photoreceptor layers contg. silicon and, for  
photoimaging)  
IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
, Nitrogen, uses and miscellaneous 7782-44-7, Oxygen, uses and  
miscellaneous  
(silicon amorphous photoreceptor layers contg., for photoimaging)

L88 ANSWER 21 OF 31 HCA COPYRIGHT 2003 ACS on STN  
107:106466 Photoreceptors with interference fringe elimination. Honda,  
Mitsuru; Murai, Keiichi; Ogawa, Kiyosuke; Koike, Atsushi (Canon K.  
K., Japan). Jpn. Kokai Tokkyo Koho JP 62100762 A2 19870511 Showa,  
34 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1985-241891  
19851029.  
AB A photoreceptor layer consisting of a 1st and a 2nd layer from

amorphous Si contg. different atoms of C, N, and/or O between the layers is formed on a substrate (e.g., metal) having surface unevenness with spherical minute depressions in which a no. of micro-unevenness spots are formed. The 1st layer may contain cond.-controlling substance(s) and be a multilayer (e.g., contg. charge inhibition or barrier layer(s)). The depression on the substrate may be given by  $0.035 \cdot \text{ltoreq. } D/R < 0.5$ ,  $D \cdot \text{ltoreq. } 0.5 \text{ mm}$ , and  $0.5 \cdot \mu\text{m} < \gamma < 20 \cdot \mu\text{m}$ , where  $D$ ,  $R$ , and  $\gamma$  are width and curvature of the depressions and height of micro-unevenness in the spherical depression, resp., and formed by free dropping of rigid spheres. Fluorinated-hydrogenated Si layers, contg. C and B ( $3 \cdot \mu\text{m}$  thick), and C 22  $\cdot \mu\text{m}$  thick, resp. for the 1st layer and a hydrogenated-fluorinated Si layer contg. N for the 2nd layer ( $0.5 \cdot \mu\text{m}$  thick) were formed on an Al alloy cylinder having surface unevenness  $450 \cdot \mu\text{m}$  in  $D$ ,  $0.06$  in  $D/R$ , and  $5 \cdot \mu\text{m}$  in  $\gamma_{\text{max}}$ . No interference fringes were obsd. in photoimaging.

IT 7440-44-0, Carbon, uses and miscellaneous 7727-37-9  
 , Nitrogen, uses and miscellaneous 7782-41-4, Fluorine,  
 uses and miscellaneous  
 (silicon amorphous photoreceptors contg., for interference  
 fringe-free photoimaging)  
 RN 7440-44-0 HCA  
 CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA  
 CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
 CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM G03G005-08  
 ICA G03G005-10  
 CC 74-12 (Radiation Chemistry, Photochemistry, and Photographic and  
 Other Reprographic Processes)  
 Section cross-reference(s): 75, 76  
 ST amorphous silicon photoreceptor layer; metal substrate interference  
 fringe free photoimaging; aluminum alloy interference fringe free  
 photoimaging; interference fringe free photoimaging photoreceptor;  
 hydrogenated amorphous silicon photoreceptor layer; fluorinated  
 amorphous silicon photoreceptor layer; carbon doped  
 amorphous silicon photoreceptor layer; nitrogen doped  
 amorphous silicon photoreceptor layer; oxygen doped

- amorphous silicon photoreceptor layer; boron **doped**  
amorphous silicon photoreceptor layer
- IT 1333-74-0, Hydrogen, uses and miscellaneous 7440-42-8, Boron, uses  
and miscellaneous 7440-44-0, Carbon, uses and  
miscellaneous 7727-37-9, Nitrogen, uses and miscellaneous  
7782-41-4, Fluorine, uses and miscellaneous 7782-44-7,  
Oxygen, uses and miscellaneous  
(silicon amorphous photoreceptors contg., for interference  
fringe-free photoimaging)
- L88 ANSWER 22 OF 31 HCA COPYRIGHT 2003 ACS on STN
- 103:224405 Photoconductor element. Saito, Keishi; Onuki, Yukihiro; Ono,  
Shigeru (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 60140256 A2  
19850725 Showa, 30 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP  
1983-245313 19831228.
- AB A photoconductor element consisting of (1) a support, (2) a  
photoconductor layer composed of an amorphous Ge-contg. sublayer and  
an amorphous Si-contg. sublayer, and (3) an amorphous Si-N top layer  
is claimed in which the photoconductor **layer** has a  
C-contg. **layer** region having C concn.  
increasing with the distance from the support-photoconductor  
interface. The photoconductor layer may also contain H and/or  
halogen and may be **doped** with a cond.-type controlling  
**dopant**. The photoconductor is esp. useful as an  
electrophotog. plate for a laser printer.
- IT 7782-41-4, uses and miscellaneous  
(electrophotog. amorphous germanium-silicon photoconductors  
contg.)
- RN 7782-41-4 HCA
- CN Fluorine (8CI, 9CI) (CA INDEX NAME)
- F-F
- IT 7440-44-0, uses and miscellaneous  
(electrophotog. amorphous germanium-silicon photoconductors  
contg., concn. profile in)
- RN 7440-44-0 HCA
- CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)
- C
- IT 7727-37-9, uses and miscellaneous  
(electrophotog. plate amorphous top layer contg. silicon and)
- RN 7727-37-9 HCA
- CN Nitrogen (8CI, 9CI) (CA INDEX NAME)
- N=N
- IC ICM G03G005-08

- ICS G03G005-04; H01L031-08
- CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 76
- IT 1333-74-0, uses and miscellaneous 7440-42-8, uses and miscellaneous 7782-41-4, uses and miscellaneous (electrophotog. amorphous germanium-silicon photoconductors contg.)
- IT 7440-44-0, uses and miscellaneous (electrophotog. amorphous germanium-silicon photoconductors contg., concn. profile in)
- IT 7727-37-9, uses and miscellaneous (electrophotog. plate amorphous top layer contg. silicon and)
- L88 ANSWER 23 OF 31 HCA COPYRIGHT 2003 ACS on STN
- 103:224403 Photoconductor element. Saito, Keishi; Onuki, Yukihiro; Ono, Shigeru (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 60140254 A2 19850725 Showa, 3 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-245311 19831228.
- AB A photoconductor element consisting of (1) a support, (2) an amorphous layer composed of a sublayer contg. Ge and a photoconductive sublayer contg. Si, and (3) an amorphous top layer contg. N and Si is claimed in which the **layer** (2) contains C whose concn. distribution is such that the layer (2) can be subdivided into 3 layer regions according to C concn. (C1, C2 and C3, resp., for 1st, 2nd and 3rd layer regions counting from the support side) and the C1, C2 and C3 satisfy the following relations:  $C2 \leq C1$  or  $C2 \leq C3$ , and if one of the C1, C2 and C3 is zero, then other 2 are not equal and not zero. The layer (2) may also contain H, halogen, and/or a cond.-controlling **dopant**. The photoconductor is esp. useful as an electrophotog. plate for a laser printer.
- IT 7782-41-4, uses and miscellaneous (electrophotog. amorphous germanium-silicon photoconductor contg.)
- RN 7782-41-4 HCA
- CN Fluorine (8CI, 9CI) (CA INDEX NAME)
- F- F
- IT 7440-44-0, uses and miscellaneous (electrophotog. amorphous germanium-silicon photoconductor contg., concn. profile in)
- RN 7440-44-0 HCA
- CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)
- C
- IT 7727-37-9, uses and miscellaneous (electrophotog. plate amorphous top layer contg. silicon and)

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

IC ICM G03G005-08  
ICS G03G005-04; H01L031-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
IT 1333-74-0, uses and miscellaneous 7782-41-4, uses and miscellaneous  
(electrophotog. amorphous germanium-silicon photoconductor contg.)  
IT 7440-44-0, uses and miscellaneous  
(electrophotog. amorphous germanium-silicon photoconductor contg., concn. profile in)  
IT 7440-42-8, uses and miscellaneous  
(electrophotog. amorphous germanium-silicon photoconductors doped with)  
IT 7727-37-9, uses and miscellaneous  
(electrophotog. plate amorphous top layer contg. silicon and) .

L88 ANSWER 24 OF 31 HCA COPYRIGHT 2003 ACS on STN  
103:203748 Photoconductor element. Saito, Keishi; Onuki, Yukihiro; Ono, Shigeru (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 60140260 A2 19850725 Showa, 26 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-250552 19831227.

AB A photoconductor element composed of a support, an amorphous Si layer, an amorphous Si-Ge layer, and an amorphous Si-C top layer is claimed in which N is added to the Si and/or Si-Ge layers. H and/or a halogen may be also added to the Si and/or Si-Ge layers. The photoconductor element has both a spectral sensitivity and durability suitable for use as an electrophotog. plate for a laser printer.

IT 7727-37-9, uses and miscellaneous 7782-41-4, uses and miscellaneous  
(electrophotog. amorphous germanium-silicon photoconductor contg.)

RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IT 7440-44-0, uses and miscellaneous

(electrophotog. plate with amorphous top layer contg. silicon and)

RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IC ICM G03G005-08  
ICS G03G005-04; H01L031-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 76  
IT 1333-74-0, uses and miscellaneous 7727-37-9, uses and miscellaneous 7782-41-4, uses and miscellaneous (electrophotog. amorphous germanium-silicon photoconductor contg.)  
IT 7440-42-8, uses and miscellaneous (electrophotog. amorphous silicon-germanium photoconductor doped with)  
IT 7440-44-0, uses and miscellaneous (electrophotog. plate with amorphous top layer contg. silicon and)

L88 ANSWER 25 OF 31 HCA COPYRIGHT 2003 ACS on STN  
103:203745 Photoconductor element. Saito, Keishi; Onuki, Yukihiro; Ono, Shigeru (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 60140253 A2 19850725 Showa, 27 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1983-245310 19831228.

AB A photoconductor element consisting of a support, an amorphous Si-Ge photoconductor layer, and an amorphous Si-N top layer is claimed in which C is added to the photoconductor **layer** and the C concn. varies smoothly with the thickness direction showing a max. within the layer. The photoconductor element is esp. useful as an electrophotog. plate for a laser printer.

IT 7782-41-4, uses and miscellaneous (electrophotog. amorphous germanium-silicon photoconductor contg.)

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IT 7440-44-0, uses and miscellaneous (electrophotog. amorphous germanium-silicon photoconductor contg., concn. profile in)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IT 7727-37-9, uses and miscellaneous  
(electrophotog. photoreceptor with amorphous top layer contg.  
silicon and)  
RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

IC ICM G03G005-08  
ICS G03G005-04; H01L031-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 76  
IT 1333-74-0, uses and miscellaneous 7782-41-4, uses and  
miscellaneous  
(electrophotog. amorphous germanium-silicon photoconductor  
contg.)  
IT 7440-44-0, uses and miscellaneous  
(electrophotog. amorphous germanium-silicon photoconductor  
contg., concn. profile in)  
IT 7440-42-8, uses and miscellaneous  
(electrophotog. amorphous germanium-silicon photoconductor  
doped with)  
IT 7727-37-9, uses and miscellaneous  
(electrophotog. photoreceptor with amorphous top layer contg.  
silicon and)

L88 ANSWER 26 OF 31 HCA COPYRIGHT 2003 ACS on STN

103:62565 Photoconductor elements. (Canon K. K., Japan). Jpn. Kokai  
Tokkyo Koho JP 60083945 A2 19850513 Showa, 26 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1983-189592 19831011.

AB A photoconductor element is composed of (1) a support, (2) an  
amorphous layer contg. Ge, (3) an amorphous layer contg. Si, and (4)  
a top layer contg. Si and N, and the element contains C in  
the **layers** (2) and/or (3). The element may also contain H  
and/or halogen in the layers (2) and/or (3). Thus, an Al drum was  
coated with Si-Ge-C mixt **layer** (formed by plasma  
chem. vapor deposition method; from GeH<sub>4</sub>-SiH<sub>4</sub>-ClH<sub>4</sub>-He mixt. gas with  
SiH<sub>4</sub>/GeH<sub>4</sub> = 1 and C<sub>2</sub>H<sub>4</sub>/SiH<sub>4</sub> = 0.04), then amorphous Si layer was  
formed, and subsequently Si-N mixt. layer was formed to give an  
electrophotog. drum which gave copies with excellent image quality.

IT 7727-37-9, uses and miscellaneous  
(electrophotog. photoconductors with top layer contg. silicon and)  
RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

IT 7440-44-0, uses and miscellaneous 7782-41-4, uses



and miscellaneous  
(electrophotog. amorphous silicon-germanium photoconductors  
contg.)

RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F- F

IC ICM G03G005-08  
ICS G03G005-04; H01L031-08  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 76  
IT 7727-37-9, uses and miscellaneous  
(electrophotog. photoconductors with top layer contg. silicon and)  
IT 1333-74-0, uses and miscellaneous 7440-44-0, uses and  
miscellaneous 7782-41-4, uses and miscellaneous  
(electrophotog. amorphous silicon-germanium photoconductors  
contg.)  
IT 7440-42-8, uses and miscellaneous 7723-14-0, uses and  
miscellaneous  
(electrophotog. amorphous silicon-germanium photoconductors  
doped with)

L88 ANSWER 27 OF 31 HCA COPYRIGHT 2003 ACS on STN  
103:62560 Photoconductor element. (Canon K. K., Japan). Jpn. Kokai  
Tokkyo Koho JP 60083949 A2 19850513 Showa, 32 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1983-189596 19831011.  
AB A photoconductor element is composed of (1) a support, (2) an  
amorphous layer contg. Ge and a cond.-controlling dopant,  
(3) an amorphous Si photoconductor layer, and (4) an amorphous top  
layer contg. Si and N, and the layers (2) and/or (3) contain C. The  
layers (1) and/or (3) may also contain H and/or halogen. Thus, a  
Si-Ge-B-C mixt. layer was deposited on an Al  
drum from a SiH<sub>4</sub>-GeH<sub>4</sub>-B<sub>2</sub>H<sub>6</sub>-C<sub>2</sub>H<sub>4</sub>-He mixt. gas by plasma chem. vapor  
deposition method, then Si-Ge mixt. layer was deposited,  
subsequently an amorphous Si photoconductor layer was formed, and a  
top layer made of Si and N was formed to give an electrophotog. drum  
which showed good durability and gave copies with good image  
quality.  
IT 7440-44-0, uses and miscellaneous 7782-41-4, uses  
and miscellaneous  
(amorphous silicon-germanium electrophotog. photoconductor  
contg.)  
RN 7440-44-0 HCA

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F—F

IT 7727-37-9, uses and miscellaneous  
(electrophotog. plate top layer contg.)

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

IC ICM G03G005-08

ICS G03G005-04; H01L031-08

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)

Section cross-reference(s): 76

IT 1333-74-0, uses and miscellaneous 7440-44-0, uses and  
miscellaneous 7782-41-4, uses and miscellaneous  
(amorphous silicon-germanium electrophotog. photoconductor  
contg.)

IT 7440-42-8, uses and miscellaneous 7723-14-0, uses and  
miscellaneous  
(amorphous silicon-germanium photoconductors **doped**  
with)

IT 7727-37-9, uses and miscellaneous  
(electrophotog. plate top layer contg.)

L88 ANSWER 28 OF 31 HCA COPYRIGHT 2003 ACS on STN

103:62559 Photoconductor elements. (Canon K. K., Japan). Jpn. Kokai  
Tokkyo Koho JP 60083948 A2 19850513 Showa, 33 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1983-189595 19831011.

AB A photoconductor element consists of (1) a support, (2) an amorphous  
Si-Ge mixt. type photoconductor **layer** which contains  
C and a cond.-controlling **dopant** and has Ge concn.  
varying with the thickness of the layer, and (3) an amorphous top  
layer contg. Si and N. The photoconductor layer may also contain H  
and/or halogen. Thus, a Si-Ge mixt. layer contg. B and C was  
deposited on an Al drum from SiH<sub>4</sub>-GeH<sub>4</sub>-B<sub>2</sub>H<sub>6</sub>-C<sub>2</sub>H<sub>4</sub>-He mixt. gas whose  
GeH<sub>4</sub>/SiH ratio was gradually decreased from 0.4 to 0.08 during the  
deposition, then the deposition was continued from a SiH<sub>4</sub>-GeH<sub>4</sub>-He  
mixt. whose GeH<sub>4</sub>/SiH ratio was decreased gradually from 0.08 to 0,  
and subsequently a top layer contg. Si and N was deposited to give  
an electrophotog. drum which gave high quality copies.

IT 7440-44-0, uses and miscellaneous 7782-41-4, uses

and miscellaneous  
(amorphous silicon-germanium electrophotog. photoconductors  
contg.)

RN 7440-44-0 HCA

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IT 7727-37-9, uses and miscellaneous  
(electrophotog. plates with top layer contg. amorphous silicon  
and)

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

IC ICM G03G005-08

ICS G03G005-04; H01L031-08

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 76

IT 1333-74-0, uses and miscellaneous 7440-44-0, uses and  
miscellaneous 7782-41-4, uses and miscellaneous  
(amorphous silicon-germanium electrophotog. photoconductors  
contg.)

IT 7440-42-8, uses and miscellaneous 7723-14-0, uses and  
miscellaneous  
(amorphous silicon-germanium electrophotog. photoconductors  
doped with)

IT 7727-37-9, uses and miscellaneous  
(electrophotog. plates with top layer contg. amorphous silicon  
and)

L88 ANSWER 29 OF 31 HCA COPYRIGHT 2003 ACS on STN

103:14538 Photoconductive recording element. Shirai, Naoko; Takeuchi,  
Tatsuo (Canon K. K., Japan). Ger. Offen. DE 3426352 A1 19850131,  
23 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1984-3426352  
19840717. PRIORITY: JP 1983-129395 19830718.

AB Electrophotog. photoreceptors giving high-quality images (no image  
flow or distortion) under conditions of high humidity are composed  
of a support and an amorphous silicon-based photoreceptor layer  
whose outer free surface shows a contact angle of .gtoreq.75.degree.  
with water. Thus, an Al cylinder was coated with a B-doped  
hydrogenated amorphous Si 1st layer, a hydrogenated amorphous Si 2nd

layer, and a C-doped hydrogenated amorphous Si 3rd (outer) layer, all by glow discharge deposition. The plate, which showed an av. contact angle with water at 77.7.degree., was capable of producing 100,000 prints.

IT 7440-44-0, uses and miscellaneous 7727-37-9, uses and miscellaneous 7782-41-4, uses and miscellaneous (electrophotog. photoreceptor with photoconductive layer contg. hydrogenated amorphous silicon and, with surface having specific contact angle with water for improved image quality)

RN 7440-44-0 HCA

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC ICM G03G005-082

ICS G03G005-14

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)

IT 1333-74-0, uses and miscellaneous (electrophotog. photoreceptor with photoconductive layer contg. doped amorphous silicon and, with surface having specific contact angle with water for improved image quality)

IT 7440-21-3, uses and miscellaneous (electrophotog. photoreceptor with photoconductive layer contg. doped hydrogenated amorphous, having surface with specific contact angle with water for improved image quality)

IT 7440-42-8, uses and miscellaneous 7440-44-0, uses and miscellaneous 7727-37-9, uses and miscellaneous 7782-41-4, uses and miscellaneous (electrophotog. photoreceptor with photoconductive layer contg. hydrogenated amorphous silicon and, with surface having specific contact angle with water for improved image quality)

L88 ANSWER 30 OF 31 HCA COPYRIGHT 2003 ACS on STN

101:120439 Amorphous silicon type photoconductor elements. (Canon K. K., Japan). Jpn. Kokai Tokkyo Koho JP 58149051 A2 19830905 Showa, 19 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1982-31938 19820301.

AB Photoconductive elements are described which are composed of (1) a

support, (2) an amorphous Si subbing layer contg. N (.1 to req. 30 at.%) and a halogen, (3) a barrier (charge injection-inhibiting) layer of amorphous Si contg. a Group V element, (4) an amorphous Si type photoconductor layer, and (5) an amorphous Si-C mixt. **layer**. The photoconductive elements exhibit excellent elec. properties, photocond., optical characteristics, stability, and durability. These elements are useful in solid-state imaging devices and are esp. useful as electrophotog. photoconductors. Thus, Al substrate was coated with (1) a Si-F-N-H layer (from a 1:1:1:1 He-SiH<sub>4</sub>-SiF<sub>4</sub>-NH<sub>3</sub> mixt.), (2) a P-doped hydrogenated Si layer (from a SiH<sub>4</sub>-He-PH<sub>3</sub> mixt.), (3) an amorphous Si:H layer, and (4) Si-C mixt. **layer** (prepd. by sputtering) to give an electrophotog. plate with excellent durability.

IT 7727-37-9, uses and miscellaneous 7782-41-4, uses  
and miscellaneous  
(electrophotog. composite photoreceptor with subbing layer from  
amorphous silicon contg.)  
RN 7727-37-9 HCA  
CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

N≡N

RN 7782-41-4 HCA  
CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IT 7440-44-0, uses and miscellaneous  
(electrophotog. composite photoreceptor with surface layer from  
amorphous silicon contg.)  
RN 7440-44-0 HCA  
CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

IC G03G005-08; G03G005-04; H01L021-205; H01L031-08; H04N001-26  
CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 76  
IT 7727-37-9, uses and miscellaneous 7782-41-4, uses  
and miscellaneous  
(electrophotog. composite photoreceptor with subbing layer from  
amorphous silicon contg.)  
IT 7440-44-0, uses and miscellaneous  
(electrophotog. composite photoreceptor with surface layer from  
amorphous silicon contg.)

L88 ANSWER 31 OF 31 HCA COPYRIGHT 2003 ACS on STN

100:112227 Photoconductive element with a support and an amorphous layer for electrophotography. Ogawa, Kyosuke; Shirai, Shigeru; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi (Canon K. K. , Japan). Ger. Offen. DE 3248369 A1 19830707, 91 pp. (German). CODEN: GWXXBX. APPLICATION: DE 1982-3248369 19821228. PRIORITY: JP 1981-213384 19811228; JP 1981-213385 19811228; JP 1981-213386 19811228.

AB Electrophotog. photoreceptors having stable elec., optical, and photoconductive characteristics and which are capable of producing high quality images having a high d., clear halftone, and high resolu., are composed of an elec. conductive support coated with a layer of an amorphous photoconductor consisting of a 1st region contg. an amorphous Si matrix and .gtoreq.1 H or halogen atom with adjacent to the support side an area contg. a **dopant** to regulate the elec. cond. and a 2nd region contg. an amorphous Si matrix and C and having the formula  $\text{Si}_a\text{Cl}_{1-a}$  ( $0 < a < 1$ ),  $(\text{Si}_b\text{Cl}_{1-b})\text{CH}_{1-c}$  ( $0 < b, c < 1$ ), or  $(\text{Si}_d\text{Cl}_{1-d})\text{e}(\text{X},\text{H})_{1-e}$  ( $\text{X} = \text{halogen}; 0 < d, e < 1$ ).

IT **7440-44-0**, uses and miscellaneous **7727-37-9**, uses and miscellaneous **7782-41-4**, uses and miscellaneous (electrophotog. photoreceptor with photoconductive layer contg. amorphous silicon and)

RN 7440-44-0 HCA

CN Carbon (7CI, 8CI, 9CI) (CA INDEX NAME)

C

RN 7727-37-9 HCA

CN Nitrogen (8CI, 9CI) (CA INDEX NAME)

$\text{N}\equiv\text{N}$

RN 7782-41-4 HCA

CN Fluorine (8CI, 9CI) (CA INDEX NAME)

F-F

IC H01L031-08

CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and Other Reprographic Processes)  
Section cross-reference(s): 76

IT Photography, electro-, photoconductors  
Photography, electro-, plates

(with amorphous **doped** silicon and amorphous **carbon**-contg. silicon layers)

IT 409-21-2, properties

(electrophotog. photoreceptor with photoconductive layer contg. amorphous **doped**)

IT 1333-74-0, uses and miscellaneous 7429-90-5, uses and

miscellaneous 7440-28-0, uses and miscellaneous 7440-36-0, uses  
 and miscellaneous 7440-38-2, uses and miscellaneous 7440-42-8,  
 uses and miscellaneous **7440-44-0**, uses and miscellaneous  
 7440-55-3, uses and miscellaneous 7440-69-9, uses and  
 miscellaneous 7440-74-6, uses and miscellaneous 7723-14-0, uses  
 and miscellaneous **7727-37-9**, uses and miscellaneous  
**7782-41-4**, uses and miscellaneous

(electrophotog. photoreceptor with photoconductive layer contg.  
 amorphous silicon and)

IT 7440-21-3, uses and miscellaneous  
 (electrophotog. photoreceptor with photoconductive layer contg.  
**doped** hydrogenated amorphous)

=> d 192 1-4 cbib abs hitstr hitind

L92 ANSWER 1 OF 4 HCA COPYRIGHT 2003 ACS on STN

137:116207 **Nitrogen doping** of fluorinated amorphous

**carbon thin films**: structural and optical  
 properties evolution upon thermal annealing. Valentini, L.; Braca,  
 E.; Kenny, J. M.; Fedosenko, G.; Engemann, J.; Lozzi, L.; Santucci,  
 S. (Universita di Perugia, Materials Engineering Center, Terni,  
 05100, Italy). Thin Solid Films, 408(1-2), 291-296 (English) 2002.  
 CODEN: THSFAP. ISSN: 0040-6090. Publisher: Elsevier Science B.V..

AB The effects of nitrogen addn. on the properties of fluorinated  
 amorphous carbon (a-C:H:F) thin films produced by radiofrequency  
 plasma enhanced chem. vapor deposition have been investigated. The  
 modifications of the structural and optical properties of the  
 material upon thermal annealing were analyzed by: Raman  
 spectroscopy; XPS; ellipsometry; as well as measurements of the film  
 thickness. It has been found that nitrogen addn. can thermally  
 stabilize, in terms of better dimensional stability, the  
 as-deposited films. XPS combined with Raman measurements revealed  
 that for the films grown with nitrogen diln., nitrogen is bonded to  
 carbon within a graphitic framework and that a nitrogen loss occurs  
 upon thermal treatment evolving in a more stable graphitic  
 configuration. The variation of the refractive index after  
 annealing has been correlated to structural changes due to the  
 desorption of both fluorine and nitrogen from the film. The exptl.  
 findings suggest that carrying out a thermal treatment, the films  
 grown with the highest nitrogen fraction undergo a redn. of the  
 refractive index to a value that is comparable with the one obtained  
 for the nitrogen-free a-C:H:F film.

CC 73-2 (Optical, Electron, and Mass Spectroscopy and Other Related  
 Properties)

Section cross-reference(s): 57, 66

ST **nitrogen doping** fluorinated hydrogenated  
 amorphous **carbon film** thermal annealing;  
 refractive index absorptivity Raman XPS **nitrogen**  
**doping** amorphous carbon

IT Films

(amorphous; structural and optical properties evolution upon

- thermal annealing and **nitrogen doping** of fluorinated amorphous **carbon thin films**)
- IT **Doping**  
(effect of **nitrogen**; structural and optical properties evolution upon thermal annealing and **nitrogen doping** of fluorinated amorphous **carbon thin films**)
- IT **Annealing**  
(effect of; structural and optical properties evolution upon thermal annealing and **nitrogen doping** of fluorinated amorphous **carbon thin films**)
- IT **Vapor deposition process**  
(plasma, growth rate as function of nitrogen content; structural and optical properties evolution upon thermal annealing and **nitrogen doping** of fluorinated amorphous **carbon thin films**)
- IT **Absorptivity**  
Raman spectra  
Refractive index  
Surface structure  
X-ray photoelectron spectra  
(structural and optical properties evolution upon thermal annealing and **nitrogen doping** of fluorinated amorphous **carbon thin films**)
- IT **Desorption**  
(thermal, fluorine and nitrogen; structural and optical properties evolution upon thermal annealing and **nitrogen doping** of fluorinated amorphous **carbon thin films**)
- IT **Thermal stability**  
(thickness variation after annealing; structural and optical properties evolution upon thermal annealing and **nitrogen doping** of fluorinated amorphous **carbon thin films**)
- IT 12385-13-6, Hydrogen atom, uses 14762-94-8, Fluorine atom, uses (amorphous **carbon film** doped with; structural and optical properties evolution upon thermal annealing and **nitrogen doping** of fluorinated amorphous **carbon thin films**)
- IT 17778-88-0, Nitrogen atom, properties (amorphous **carbon film** doped with; structural and optical properties evolution upon thermal annealing and **nitrogen doping** of fluorinated amorphous **carbon thin films**)
- IT 7440-44-0, Carbon, properties (undoped and **nitrogen-doped** hydrogenated **fluorinated** amorphous **film**; structural and optical properties evolution upon thermal annealing and **nitrogen doping** of fluorinated amorphous **carbon thin films**)



- 125:101997 **Nitrogen-doped** fluorinated amorphous **carbon** thin films grown by plasma-enhanced chemical vapor deposition for low dielectric constant interlayer dielectrics. Endo, Kazuhiko; Tatsumi, Toru (Microelectron. Res. Lab., NEC Corp., Ibaraki, 305, Japan). Applied Physics Letters, 68(25), 3656-3658 (English) 1996. CODEN: APPLAB. ISSN: 0003-6951. Publisher: American Institute of Physics.
- AB **Nitrogen-doped** fluorinated amorphous **carbon** thin films for low dielec. const. interlayer dielects. have been investigated. The films were deposited with a parallel-plate plasma-enhanced CVD deposition. Source gases were CH<sub>4</sub>, CF<sub>4</sub>, and N<sub>2</sub>. The thermal stability of the films can be improved by the addn. of N<sub>2</sub>. XPS measurement revealed that the C-N bonds were formed in the films with the addn. of N<sub>2</sub>. The dielec. const. of the films was increased from 2.1 to 2.4 at a nitrogen concn. of 10%.
- CC 76-11 (Electric Phenomena)
- ST plasma CVD **fluorinated** amorphous **carbon** film; deposition CVD **fluorinated** amorphous **carbon** film; **nitrogen doped** **fluorinated** amorphous **carbon** film
- IT Electric insulators and Dielectrics  
(interlayer; **nitrogen-doped** fluorinated amorphous **carbon** thin films by PECVD deposition for low dielec. const. interlayer dielects.)
- IT 7440-44-0D, Carbon, fluorinated  
(amorphous; **nitrogen-doped** fluorinated amorphous **carbon** thin films by PECVD deposition for low dielec. const. interlayer dielects.)
- IT 7727-37-9, **Nitrogen**, uses  
(**nitrogen-doped** fluorinated amorphous **carbon** thin films by PECVD deposition for low dielec. const. interlayer dielects.)
- IT 74-82-8, Methane, uses 75-73-0, Tetrafluoromethane  
(source gas; **nitrogen-doped** fluorinated amorphous **carbon** thin films by PECVD deposition for low dielec. const. interlayer dielects.)
- L92 ANSWER 3 OF 4 HCA COPYRIGHT 2003 ACS on STN
- 113:182203 Plasma chemical vapor deposition of fluorinated-**nitrogenated** hard **carbon** films. Yamazaki, Shunpei; Hirose, Naoki; Hayashi, Shigenori; Sasaki, Mari; Ishida, Noriya; Suzuki, Kunio (Semiconductor Energy Laboratory Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 02107773 A2 19900419 Heisei, 8 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1988-261967 19881017.
- AB The title method comprises supply of a mixt. of a 1st gas and a 2nd gas contg. C-F and C-N bond(s), resp., and H<sub>2</sub> or a 3rd gas contg. C-H bonds and application of a self- or outer-bias voltage at -50 to -2000 V onto the substrate. The film has adjusted resistivity, transparency, and hardness. A **C** protective film of an electrophotog. plate was prepd.

- IC ICM C23C016-26  
ICS C23C016-30
- CC 75-2 (Crystallography and Liquid Crystals)  
Section cross-reference(s): 74, 76
- ST hard **carbon fluorinated nitrogenated**  
**film**; electrophotog plate hard **carbon** protective  
**film**; plasma chem vapor deposition hard carbon
- IT Electrophotographic plates  
(**diamond-like carbon** protective  
**films** for)
- IT Optical imaging devices  
(sensors, **diamond-like carbon**  
protective **films** for)
- IT Printing apparatus  
(thermal, heads, **diamond-like carbon**  
protective **films** for)
- IT 7727-37-9, Nitrogen, uses and miscellaneous 7782-41-4, Fluorine,  
uses and miscellaneous  
(hard **carbon films** contg., plasma chem. vapor  
deposition of)
- L92 ANSWER 4 OF 4 HCA COPYRIGHT 2003 ACS on STN
- 109:101848 Electrophotographic photoreceptor. Ino, Shuji; Osawa,  
Mochikyo; Yasutomi, Hideo (Minolta Camera Co., Ltd., Japan). Jpn.  
Kokai Tokkyo Koho JP 63081448 A2 19880412 Showa, 17 pp. (Japanese).  
CODEN: JKXXAF. APPLICATION: JP 1986-229354 19860926.
- AB The title photoreceptor is characterized by formation of the  
charge-generating and the charge-transporting layers from  
hydrogenated or fluorinated amorphous Si, and hydrogenated amorphous  
C contg. N. Thus, an amorphous **C film** 15 .mu.m  
thick and contg. H 39 (based on C + H) and N 0.3 at.%, and an  
amorphous Si film 0.3 .mu.m thick and contg. 20 at.% H were  
sequentially formed on an Al substrate at 250.degree. in substrate  
temp. from H2-C2H4-N2 and H2-SiH4, resp., by plasma chem. vapor  
deposition. The photoreceptor prepd. produced clear images.
- IC ICM G03G005-08
- CC 74-3 (Radiation Chemistry, Photochemistry, and Photographic and  
Other Reprographic Processes)  
Section cross-reference(s): 75
- IT Electrophotographic photoconductors  
Electrophotographic plates  
(carbon amorphous hydrogenated-**nitrogenated**  
charge-transport **film** with silicon amorphous  
hydrogenated-**fluorinated film** for)
- IT 7440-21-3, Silicon, uses and miscellaneous  
(amorphous, hydrogenated or **fluorinated, films**  
from, for electrophotog. plates)
- IT 7440-44-0, Carbon, uses and miscellaneous  
(amorphous, hydrogenated-**nitrogenated** charge-transport  
**films** from, for electrophotog. plates)